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A CASE OF BILATERAL MOTOR APRAXIA WITH DISTURBANCE OF VISUAL ORIENTATION.

BY

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IT has been only within the last few years that the motor disturbance known as "apraxia" has claimed much attention, or been fully investigated, and even yet very few well-marked instances of the condition have been described in English literature. In fact, it is mainly through the careful summary of the work of Continental authors, published seven years ago by Dr. S. A. K. Wilson, that apraxia is known to English readers.

Apraxia is a complicated condition, but in its simplest terms it consists in inability to combine simple movements into complete purposive acts; in other words, it is a condition in which a patient in whom the power of voluntary movement is intact, or at least not seriously affected by palsy, ataxia, or sensory loss, is yet unable to perform certain actions, or is incapable of employing objects—as a knife or a key—correctly, even though he is aware what is required of him, and though he recognizes the use and the nature of the object. Liepmann, to whom our knowledge of the condition is largely due, has defined motor apraxia as incapacity for subjectively purposive movements of the limbs, with conservation of the power of movement.

Apraxia may be of different degrees of severity, and may affect the limbs of only one or of both sides; its only manifestation may be the inability to protrude the tongue, to which Hughlings-Jackson originally drew attention in hemiplegic patients, or the patient may fail in most actions he is requested to attempt. Usually, however, he succeeds in some acts and fails in others—as a rule, in the most complicated and less familiar.

Many factors may contribute to this complex functional disturbance, especially mental impairment with affection of memory and attention, sensory loss, and agnosia or inability to recognize objects; but in the case described here the intellectual state was moderately good, there was no affection of sensation, and no form of agnosia. Vision, it is true, was affected, but its disturbance obviously stood in no causal relation to the apraxia.

The patient, Pte. M., aged 27, was admitted to a base hospital on November 2nd, 1914, with the history of having been wounded in the head by a shrapnel bullet some days previously. On admission he was in a dull and confused state; he was unable to remember his number or regiment, how he was wounded, and what happened to him during the several days that elapsed between the infliction of the wound and his arrival at the base. There was no paralysis, and the range and the power of the movements of all his limbs were normal; there was no obvious ataxia. The right knee-jerk was, however, brisker than the left, and the plantar response on this side was extensor. Tactile and painful stimuli were appreciated naturally and localized correctly everywhere, and there was apparently no loss in his sense of position. There was no optic neuritis.

The *wound of entry* was a small puncture 23 cm. behind the nasion (nasion to inion = 34 cm.) and 7 cm. to the right of the middle line; there was no exit wound, but a round shrapnel bullet could be felt under the scalp 4 cm. above and 4 cm. behind the upper margin of the attachment of the left pinna. An *x*-ray examination revealed a small gap in the skull under the wound of entry and several fragments of bone deep in the brain substance along a track leading from it. The bullet had apparently just broken through the skull in the left temporal region, and was removed, together with several fragments of bone, by Lieutenant Colonel Sargent a few days later. It was a spherical lead ball 12 mm. in diameter. It was dropped into sterile broth, but produced no growth. A clean circular opening, only slightly larger than the missile, was found in the squamous bone. The entrance wound was not touched till several weeks later, when a few fragments of bone, which had probably been extruded from the brain, were removed from dense fibrous tissue at the bottom of a shallow sinus.

His condition improved rapidly after his admission to hospital; no weakness or paralysis developed, the reflexes became normal, and all forms of sensation remained unaffected. His hearing was also normal, but there was a complicated disturbance of vision which will be described in detail later. He rapidly regained almost the entire use of his intellectual faculties; he had been apparently an intelligent man, had been educated at a first-class school and trained as an engineer; before enlistment he was employed as a draughtsman. His memory for the past was evidently fair, but there was a blank, which gradually diminished, for events that occurred during a considerable period before the infliction of the wound. On the other hand, his retentiveness, especially to visual impressions, was much impaired. His general attention was always fair, though at first he tended to tire easily. At no time, however, during the three months he was under observation could his behaviour and conduct be described as normal: it rather resembled that of an intelligent child, and he was in fact always treated by his fellow patients and by the nurses as an interesting child would be. He was always too facile, laughed unnecessarily and often inappropriately; and on one occasion, when another patient near him died, he burst into tears and asked to be moved into another ward. He was always extremely good tempered and never moodish. One striking feature was the fact that he rarely showed any signs of irritation or natural annoyance when he failed to perform simple actions on request or spontaneously.

There was considerable disturbance of speech when he was first admitted, but it became gradually less; in the first place he stuttered, but according to his own statement he was subject to this in childhood, and, apart from this, he had no obvious difficulty in uttering words. He could understand speech and even complicated orders fully, or failed to do so only when his power of retaining the whole sentence was at fault. He always comprehended, for instance, and reacted intelligently to any joke made at his bedside. He had, however, some difficulty in calling up words, especially names, but even then succeeded in expressing himself fully by the substitution of a word or of an explanatory phrase. He never used wrong words.

He was from the first able to read and comprehend short sentences, but had great difficulty in following consecutive words and lines owing to his visual trouble; during the whole time he was under observation he had, however, considerable difficulty in reading individual letters aloud. He was quite unable to write even single letters, and on attempting it only made an unintelligible scrawl—most often a rough circle—but as he was equally incapable of drawing a line or any simple object, although he was a draughtsman by profession, this inability was obviously due to his apraxia rather than to a specific agraphia. Between two and three months after the infliction of the wound, when most of these observations were recorded, his speech defect was almost negligible.

In spite of the fact that there was no weakness, ataxia, or sensory disturbance in any of his limbs, he showed from the first day he was in hospital a peculiar motor disability, which consisted essentially in an inability to perform certain even simple purposive actions and to use objects and instruments which were quite familiar to him and which he recognized correctly. At first, for instance, he had even difficulty in feeding himself, in performing movements to order, and in using even the simplest tools, as a pencil or knife, but with time this inability gradually diminished, apparently largely owing to constant practice and steady application, for he certainly relearnt first those actions of which he had most need, as lighting a cigarette.

The nature of this disability can be most easily conveyed by describing his attempts to execute actions of various kinds. Here, however, it is advisable to emphasize again that he always had a clear idea of what he was required to do, and that he never showed any signs of agnosia, or inability to recognize the use and nature of objects which he perceived either by vision or by touch. Further, he was never satisfied with the execution of a wrong action or with the misuse of an instrument, as a patient with

aphasia, agnosia, or general mental impairment may be. On the other hand, he was always anxious to explain his mistakes and failures, generally saying, "I have forgotten how to do it," or "That is something like what you wanted me to do, but it is not quite right; I can't remember exactly."

An attempt to analyse his difficulties by further introspection yielded no reliable facts.

The motor disability was equally pronounced in his two hands, and involved the movements of his legs too; it was usually more prominent when the action required the use of two hands than in those which he could perform with one alone; when given, for instance, a knife and fork he always focussed his attention on and directed his efforts to the one first, and only after he was satisfied with the result attempted to grasp the other or use it appropriately. His disability could be excellently illustrated by handing him a pencil and asking him to draw a line, any simple object, or form a letter; at first he had great difficulty in taking hold of the pencil correctly, and when he succeeded, or after he had learnt to do so, he would bring its point slowly to the paper and then hesitate as though perplexed as to how to use it. If urged to complete the drawing or letter he would suddenly make an irregular scrawl, which frequently resembled an O or C, and if then asked what he had drawn, would smile and remark, "No, that's not what I wanted to do, that is like an O (or C)." The result was the same whether he was asked to write a letter or draw a straight line or a pipe, yet he always recognized these figures when drawn and shown to him; on one occasion, when he had formed a circle in his attempt to sketch a pipe, he pointed out that it was like the opening of the bowl of the pipe, but it was not what he intended to draw. He succeeded no better in his attempts to copy simple linear figures.

The following table illustrates his efforts to perform certain actions about two months after the infliction of the wound; the actions required of him are given in the left column, his attempts to execute them in the right.

1. *Actions to Order.*

A. Put out your tongue	Well performed (formerly unable to do this, showed teeth, and grinned when this order given).
B. Cough	Well performed.
C. Smell	No movement at first; succeeds when piece of soap put in front of him; when this is removed, fails.
D. Yawn	Opens mouth, makes whistling movements.
E. Whistle	Opens mouth, puts out tongue.
F. Put right hand on top of head ...	At first brings hand to chin; then to nose; then holds it in front of him, says, "This is my right hand," and slowly brings to top of head.
G. Put left hand on top of head ...	Identical with last.
H. Put right thumb into mouth ...	Identifies thumb, then puts forefinger into mouth; recognizes mistake. Says, "No, that's my thumb"—holding thumb with left hand; eventually puts left thumb into mouth.
I. Turn eyes to right	Looks straight in front of him, then looks to left, finally turns eyes to right.
J. "Eyes right" (uttered sharply as a military order).	Well and quickly performed (at first had no more success with this than last order).
K. "Salute"	Brings hand smartly to forehead giving correct military salute. (Has been able to perform this military act almost from the day of admission.)

2. *Ability to Recognize and Use Various Objects when Shown Them.*

A. Shown a key	Names correctly; describes use "to put in lock," fumbles with key for nearly a minute, holds in many attitudes, then, holding by ring at last makes correct movement with hand.
B. Use of knife and fork	Fails to get either knife or fork correctly into hand, grasps in various positions; first puts fork in left hand, knife in right, then changes about; even when they are placed correctly in hands fails to make correct movements.
C. Unbutton coat	Slow and clumsy, but succeeds; tendency to "tear out" button.
D. Button coat	Correct with right and left hands.
E. Shuffle a pack of cards	Takes hold of cards aimlessly, one or two at a time; makes no attempt to shuffle.
F. "Shoulder arms," when given piece of wood to represent rifle.	Takes "rifle" first in one hand, then in the other; holds against right shoulder, then to left, performing various movements, all incorrect, with unengaged hand; makes no intelligent attempt even when shown correct method by observer.
G. Given a book upside down; told to read from it.	Says, "Oh, this is upside down"; endeavours to rectify error, turns over pages, holds book on end, looks along it, fumbles with pages; says, "No; I can't do it." When book put right way up by observer and given him, says, "Yes; that's right," and proceeds to read.
H. Open matchbox and remove three matches.	This correctly performed after some fumbling and hesitation. (He was quite unable to do this for some days after admission, but, being an ardent smoker, has since had plenty of practice.)
I. Light cigarette in his own mouth with one of the matches.	Some difficulty in finding which is right portion of box to strike on; first strikes wrong end of match; commences by lighting cigarette at about its middle, then very nearly burns his moustache, finally succeeds, and puffs away contentedly.
J. Replace unlighted matches in box ...	Experiences much difficulty; first attempts to stuff them into unopened box, then opens box holding it upside down, at last finds interior of box and replaces matches in a very clumsy fashion.

3. *Representation of Use of Objects Without Being Shown Them.*

A. Movement of key in lock ...	Performs well, rotates hand correctly.
B. Shake hands	Holds right hand out, fingers extended, rotates arm (as in turning key in lock).
C. Given a bowl, make movement of eating from it with an imaginary spoon.	Quite unable to perform. (Succeeds if given a spoon with bowl.)
D. Make movement of brushing teeth.	Catches hold of chin, then says, "No; I had an idea, but I have lost it." Makes various incorrect attempts, and says, "No; it's no use."
E. Make movement of turning handle of a barrel organ.	Holds out right hand as in B, rotates (again as in turning key in lock).
F. Make movements of washing hands.	Succeeds only if a piece of soap and water in basin are given him.

4. *Imitation of Certain Movements made by Observer.*

A. Make a fist	Correct right and left hands.
B. Hold hands in prayer attitude ...	Brings right hand to right side of face, says, "No; that's wrong"; recognizes attitude when shown him by observer, says, "Yes; it's in the picture you see everywhere"; then performs it correctly.
B. Repeated	Caught hold of chin, then extended both hands in front of him, saying, "I thought I was going to do it."
C. Hold piece of wood horizontally with either hand.	Takes object, fumbles with it for a time, then places it vertically; unsatisfied with this position, and eventually gives up the attempt.
D. Catch nose with hands; first right, then left.	Correct.
E. Put right finger in ear	Hesitates; first puts hand on top of head, then correct.

5. *Performance of Various Expressional Movements.*

A. Smiling, looking cross, looking sad, surprised, etc.	Normally performed, both to order and also in reaction to surroundings.

6. *Conventional or Actions and Activities of Ordinary Life.*

A. Throw a kiss	... ...	Correct.
B. Beckon	... ...	Waves whole hand in an indefinite manner. Says, "No, that's wrong; I can't get it right."
C. Dressing	... ...	Fails completely to put on pyjama jacket. Likewise fails with trousers, putting both legs into one trouser leg, unable to extricate himself without assistance, although he makes violent efforts.

7. *Performance of Certain Reflexive Movements.*

A. When ear is tickled with a feather, patient puts up hand to remove the stimulus automatically, though when ordered to put finger in ear is unable to do so.

B. If a hair is pulled, or if he is pinched, he brings his other hand readily to the spot stimulated, and withdraws the part stimulated.

Lower Limbs.

When his lower limbs were investigated, a condition very similar to that which affected his arms was found—that is, he had difficulty in performing purposive actions to order, imitating those made by the observer, and in employing his legs in more complex acts, as in putting on his trousers. When told to bring his right heel to his left knee, for instance, he merely crossed his feet; and when asked to put on a sock, was unable to do so, not only because of the apraxia of his arms, but mainly because he failed to hold his foot in a proper position. Similarly, on one occasion when, after walking about the ward, he was told to sit on his bed, he placed his hands on it, then turned his back away from the bed, and, after some hesitation, began to sit down in this direction.

REMARKS.

These descriptions give an idea of his condition as it was about two months after the infliction of the wound. During the following month a certain amount of improvement occurred, especially in performance of actions in which he had had practice—as in getting his smoking materials together and lighting a cigarette. Further, it was found that he could be taught by daily practice to perform actions in which he could not at first succeed; he became able to turn a book which was given to him upside down into the correct position when he was made to do so several days in succession.

The tests recorded above show that there was no tendency to misuse or mistake objects, and no trace of agnosia; further, it was evident that he was never satisfied with his mistakes or with one action when another was required of him. Although he frequently explained his failures by saying, "I have forgotten how to do it," it was evident that they were not due to lack of attention or loss of memory, for his general attention was always fairly good, and, apart from a deficient retentiveness of visual impressions, his memory was not seriously impaired.

There was at no time any trace of tonic perseveration or that difficulty in relaxing muscles that he had contracted voluntarily, which has been often associated with apraxia; and it was only in the early stages of his illness that he showed any tendency to repeat actions which he had just performed when requested to do something else (clonic perseveration).

VISUAL DISTURBANCE.

When the patient first came under observation a disturbance of vision was noticed, but its nature could not be properly investigated till his general condition had improved. The most striking feature was his difficulty in looking straight at the observer's face or at any object held in front of him; when asked to do so, he generally stared open-eyed in a wrong direction and then moved his eyes about in an irregular manner, most commonly towards the ceiling, saying, "Sometimes I can see quite well, but often I cannot see what I want to look at." On the whole he seemed to see better the less effort he made. Further, even when he could see and recognize an object, he usually failed to take hold of it directly.

At present, three months after the infliction of the wound, these troubles persist, though they are less pronounced than they were. The optic discs are normal; his central vision is now $\frac{6}{6}$ in each eye, and he can recognize the movement of fingers in all parts of each half of his visual fields. Perimetric examination is not easy owing to his difficulty in keeping his eye directed on the fixation point; but repeated observations have shown he can recognize a white object 10 mm. square to the normal peripheral limits in both eyes. There is, however, some amblyopia in both lower right quadrants, which reaches to within 10 degrees of the fixation point. In this amblyopic area he frequently says, "There is something moving, but it is not plain, and I don't know where it actually is." No defect in visual acuity can be discovered in the left halves of the visual fields, and the fields for red and green are normal in extent to both sides of the fixation point.

Although there was no ocular palsy, for several weeks after his injury he was frequently unable to move his eyes to order in any given direction, even though he understood fully what was required of him, and still he often makes mistakes or succeeds only after several attempts; when on one occasion he was asked to look upward toward the ceiling as he was sitting erect, he pointed correctly to it with his hand, but moved his eyes first to the right, then to the left, and finally downwards. His eyes are, however, always turned accurately towards an unexpected noise made to one side of him, and he generally succeeds in obeying the military command of "Eyes right" or "Eyes left" when either is *suddenly* given to him.

He is still unable to follow accurately with his eyes a finger or any other object moved in any direction; they generally remain for a moment directed towards the position in which he originally fixed it, and may either fail to follow it at all, or they may be later suddenly jerked towards the direction in which it was moved. Similarly he fails to keep his eyes fixed on a spot, as on the observer's eyes, when his head is passively rotated to either side.

The difficulty in fixing or bringing into central vision objects in front of him is passing off, but he frequently fails still to look directly into the observer's eyes or at any object when asked to do so; often he merely opens his eyes, stares in a wrong direction, and then swings his eyes irregularly about in search of it. Even when there can be no doubt that he knows the position of the object in space at which he should look, as his own hand, for instance, he often fails to bring his eyes directly to it. The tendency for his eyes to deviate from the object he has fixed is now less than it was.

Further, there is frequently no reflex blinking, withdrawal of the head or other general reaction when a hand or other object is suddenly swung towards his eyes, either from in front or from either side, or to any other threatening action on the part of the observer. And when a light is suddenly turned on to one side he does not, as a rule, turn his eyes to it with the accuracy and promptitude of a normal person.

He still does not succeed in taking hold of an object held in front of him and in his line of vision with precision and accuracy. This defect is more clearly seen when he is asked to touch a spot on which his eyes are directed; several records were taken by asking him to bring his finger to a black dot on a sheet of paper held in various planes of space in front of him, and it was found that the error was equally great in all directions. This defect cannot be attributed to ataxia of his limbs—that is, to disharmony in the range and time of the components of the movement, as there is no evidence of this as he handles or attempts to use objects; nor can it be wholly due to the motor disability described above, as he can bring his finger accurately to the tip of his nose, even when his eyes are closed. Further, there is no demonstrable loss in the sense of position or of passive movement to which "sensory ataxia" could be due. Despite the inaccuracy and awkwardness of his movements he can, however, always succeed in reaching any object which is at the moment in central vision. On one occasion, when he was not aware he was under observation, he wished to get a box of matches from his locker in order to light a cigarette; he sat up in bed, turned his head and eyes

towards the locker, stared vacantly at one spot for a moment, then slowly and deliberately moved his eyes into other directions, until, after several seconds, the matchbox came into his central vision; then he put his hand out to take hold of it, but did not succeed in doing so accurately on the first attempt.

He does not present any trace of visual agnosia—that is, an inability to recognize and distinguish by their visible characters objects he can see. From the first, too, he recognized ordinary symbols, as the plus, subtraction, and the multiplication signs, an arrow pointing direction, etc. That he can recognize letters and read has been already pointed out. Further, he recognized at once the well-known visual illusion of the truncated pyramid, saying, "That's a box; it changes according as your eyes catch it, sometimes I can see it open, sometimes the other way."

His visual memory, too, is at least not seriously affected; he can from memory describe the form of familiar objects —as a pipe; give a minute description of his father, and tell how he would reach his bedroom at home. He is evidently a strong visualist, and speaks of having "a good picture" of incidents which occurred while he was in the trenches, as of a German attack by fire. His colour memory is apparently also intact; he can remember the colours of the football shirts worn by a local team, and describes the sky as "blue as a rule, with clouds of different colour, and it is often red at sunset, especially in stormy weather."

On the other hand, his visual retentiveness is very defective; when he is shown in succession four objects which he can recognize and name, he is, as a rule, unable to name them again or describe them in correct order after an interval of thirty seconds; and after the same period he is unable to recollect the number or arrangement of four or five dots which he had seen on a sheet of paper. He is much more retentive to auditory impressions, as words or sentences repeated to him.

Another prominent symptom is his inability to localize, or at least recognize correctly, the relative positions of objects placed in front of him. He has always been much confused as to which is right or left, and even after daily testing he has remained uncertain which is his right and which his left hand, and his difficulty in describing whether one object is to the right or to the left of another is consequently not surprising; but it was found that when he looked at two objects he was uncertain whether two similar objects which were immediately uncovered were in the same relative positions, or if their positions had been changed when he closed his eyes for a moment. This held whether the test objects were side by side, one above the other, or one nearer to him. (These tests were carried out by silver and copper coins of the same size, and by squares of green and white paper.) The most remarkable errors were made when he was asked to say which of two objects was the nearer to him; even when they were separated by 10 to 15 cm., at a distance of half a metre from his eyes he made many mistakes; the explanation he offered spontaneously was, "I can only look at one at a time"; when his finger was moved from one to the other he could, however, recognize their relative positions at once.

Similarly, he often fails to distinguish the difference in length of two lines, even when it is considerable, and frequently calls the shorter the longer, or vice versa, though their lengths may be in the proportion of two to three. This is especially so when they are not drawn parallel and close to one another. An attempt was made to determine whether this failure is dependent on a defect in the execution of, or on a disturbance of the proprioceptive impulses initiated by, his ocular movements, by comparing his replies when he was allowed to look at the lines for some time and range his central vision over them, with those he gave when the lines were exposed for only a moment, but his difficulty in fixation made reliable conclusions impossible. But, though he is unable to estimate the relative lengths of two lines, he can always recognize accurately and without delay whether a rectangular quadrilateral figure is a square or not; this is apparently due to the fact that he sees the figure as a whole and recognizes its shape at once, as he can a drawing or an illustration, while to compare the lengths of two lines he must move his eyes from one to the other.

When an object is held up to one side of the point he is at the moment fixing, he always fails to take hold of it or even point in its direction if he does not look at it directly; if, for instance, the observer's arms are outstretched from his side, and the patient is asked to point to the moving fingers of one or other hand he usually only brings his own hand to the observer's face or shoulder. As there is neither ataxia or serious sensory disturbance in his arms, this failure can be due only to his inability to orientate and localize correctly objects in the extra-central portions of his fields of vision; in fact he states not infrequently that though he can see the object he is not sure where it is. This was clearly demonstrated during examination with the perimeter; he frequently said he was only aware that "something white was moving somewhere" as the test object was brought towards the fixation point, and frequently made gross errors when he attempted to point to or describe its position; on one occasion, for instance, he described it in the left lower quadrant when the object was in the right upper quadrant.

There is obviously, then, a loss of the local signature of visual impressions identical with that loss which as a result of cerebral lesions often leads to disturbance in the localization of tactile stimuli.

He frequently fails to recognize moving objects by extra-central vision, in portions of the visual fields in which he is certainly not blind, especially when two are presented simultaneously to him, one to each side of the fixation point, as the observer's fingers for instance. The proportion of such stimuli which he misses is variable, and increases as he tires or when his attention flags. A similar inability to recognize, with the constancy that a normal person can, the presence of objects outside central vision is occasionally seen as a one-sided phenomenon with lesions of the post-central portion of the opposite cerebral hemisphere.

That objects outside his central vision do not readily excite attention is seen in many other tests too. When asked to read, for instance, he was at first frequently satisfied to pick out a few individual words from a page, and he still has difficulty in following the lines in the normal manner. Now he occasionally takes up the daily paper, which he can read intelligently, though only slowly and with difficulty, due, he explains, to the fact, "I start to read a column, but soon skip some lines, or I may get on to another column." It is remarkable that even when only one of a row of letters which he was asked to read was exposed to him, he frequently failed to fix it, saying, "I'm not looking at it now, I have lost it"; and that immediately afterwards he read correctly and with scarcely any hesitation the following title, which contained words certainly unfamiliar to him, "Histological and Experimental Observations on the Destruction of Tumour Cells in the Blood Vessels."

He also makes very poor attempts at exploring with his eyes any large surface presented to him; if, for instance, he is shown the page of a journal on which there are a few widely-separated illustrations, he often says there is only the one on which his eyes first fall, and rarely succeeds in detecting them all. Similarly, when he is asked to count or to point to four or five coins placed irregularly and at some distance apart on a board in front of him, he is generally content with indicating one or two, and makes no attempt to run his eyes over the whole surface to make sure that those only are present which he had seen at the first glance. This failure is obviously not due only to the right-sided hemiamblyopia, for he fails as often to pick out objects to the left as to the right of the point to which his eyes are directed; it seems, in fact, that his attention to visual impressions tends to be arrested or occupied by any object that is at the moment in central vision. If, on the other hand, he is asked to count coins or other objects arranged in a close series in front of him he usually starts at any part of the series to count to right or left, but soon becomes confused and begins to enumerate again those which he had already included in his count; he can, however, count them accurately if he is allowed to take each in succession into his hand. Similarly, though he often fails to count by vision alone fingers held at some distance apart in front of him, he succeeds if he is allowed to run his hand over them.

These and other tests indicate that not only do objects outside central vision fail to excite his attention

although he is not blind to them, but that he is also unable to orientate or localize in space the positions of objects seen in the peripheral parts of the retina, and the relative positions of those that come in succession into central vision.

This case consequently presents an apraxia of the oculo-motor movements similar to that described in the limbs, a defect in visual localization and orientation, and a failure of objects that stimulate the peripheral parts of the retinae to excite attention and the appropriate ocular movements.

Although his lower limbs are apraxic in imitating movements made in front of him, in attempting movements to order, and especially in more complex actions, as in putting on his trousers, he can now walk easily, but proceeds only in short, shuffling steps, as though not confident of himself. His gait is, however, not ataxic. If left alone, he quickly deviates from the direction in which he wishes to go and runs into objects even though he is aware they are present. When, for instance, he is asked to walk between two rows of beds, he frequently turns to the right or to the left and walks up against one; it is noteworthy that he more commonly deviates to the left, though the left halves of his visual fields are certainly unrestricted. Even when urged to keep his eyes to the ground and avoid obstacles, he often does not succeed; he has even run up against a wall or against a large screen which stands in the ward. He can, however, walk straight to a person or an object some distance away if urged to keep his eyes fixed on it, provided there are no obstacles in the way.

When he was brought into a large room in which a few chairs had been placed, and ordered to walk to a point which could be reached without encountering any serious obstacle, he almost invariably walked into a chair and then pulled up suddenly as if surprised at its presence, even though he had seen it and pointed to it before he started. After hesitating for a moment, as though uncertain how to get round it, he usually shuffled towards one side with side-steps, very much as a crab does when it meets a stone, frequently retraced his steps when almost around it, and after he had evaded it often set out in a wrong direction towards his goal. He explains his difficulty by saying, "I don't look where I am going and I can't always go where I want to," but if his movements are carefully observed it is obvious that it is chiefly due to the fact that visual impressions of the obstacles do not readily excite his attention.

An equally striking phenomenon is his inability, or at least his great difficulty, in finding his way about. When he is taken some distance from his bed he is unable to make his way to it again, even though he may see it and point correctly to it. On one occasion, for instance, he was brought about five yards from his bed, to reach which he had only to take a single right-angle turn, but though he indicated it correctly and recognized the patient in the adjoining bed, he turned to walk in a wrong direction when told to go to it. This happened even after the correct route had been pointed out to him. On another occasion, when taken into the next ward, he failed to return through the open door when asked to do so.

Although inattention to visual impressions certainly contributes to it, this inability to find his way about must be attributed chiefly to loss of spatial orientation and to inappreciation of direction and of the spatial relations of objects which he can see and recognize by vision.

SITE OF THE LESION.

The exact extent and position of the anatomical lesion which produced these symptoms is naturally of great interest. It may be assumed with considerable probability that the shrapnel ball had taken a direct course between its entrance and its exit, for in other cases of similar nature we found this to be the case.

Taking the points corresponding with entrance and exit wounds in this case, the brain was entered in the posterior and upper part of the right supramarginal gyrus, and we have reason to believe that the track passed through the dorsal part of this hemisphere, perforated the falx 1½ cm. dorsal to and 1 cm. in the front of the posterior margin of the splenium of the corpus callosum, entered the left hemisphere in this position, passed just dorsal to Wernicke's field in front of the knee of the optic radiations, and made its exit in the inferior part of the left supramarginal gyrus in front of the posterior end of the Sylvian fissure.

Experience has shown that the area of destruction and secondary change produced by such a missile is generally of considerable extent. The track would probably admit a finger.

Finally, it may be remarked that in several of the recorded cases of apraxia, and of disturbance of visual orientation and localization, the lesions corresponded more or less closely in position to that probably present in this patient.

MENTAL CONDITIONS FOLLOWING STRAIN AND NERVE SHOCK.*

BY

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THE following is a brief sketch of the work which is being done in the Red Cross Military Hospital, Maghull, in connexion with the mental and nervous disturbances occurring among those who have experienced the strains and shocks of a shorter or longer period at the seat of war.

The results produced on the nervous system by shocks of varying severity have frequently been described in detail, and it would be superfluous to collect again and classify the phenomena associated with a disturbance of the sensory and motor systems, of the vasomotor system, of the different organs of the body, and of all the functions of the mind.

Judging from the reports recently published in France—and these are fully corroborated by our own experience—it seems improbable that examination of the cases invalided from the war will add very much to our knowledge of the symptomatology of these conditions. On the other hand, such an opportunity to investigate a large number of those suffering from psychic disturbances during the early stages of the illness has never been provided before. In this early period the patient is capable of co-operating effectively with the physician, and it is thereby rendered possible to go beyond the mere symptoms and to discover the psychic cause which has led to the determination of the form assumed by the disease and in many cases to trace the various stages through which the illness may have passed. This will perhaps be more easily appreciated if a series of cases is briefly described.

In the first place, the disturbances referred to above may appear in an intense form as the result of a shock, and, as in civil life, they will gradually disappear after a short period of rest and quiet in a hospital. But unfortunately the number of cases which recover so easily is limited. After several weeks or months in a hospital, and when most of the outward manifestations of shock may have disappeared, the patients will still complain of a changed feeling in themselves; there is produced an alteration in their personality which to them is something mysterious and for which they can find no satisfactory explanation. They confess to a slight loss of control and ask, "What is it that makes me so irritable at a little noise or at being brushed against by another patient as he passes me? I used not to be like that." As a result of this and of their inability to explain it to themselves, they suffer from a condition of anxiety, of apprehensiveness which is very troublesome and may form the starting-point for a more serious illness.

In some cases the physical expression of a special emotion, such as fear or terror, persists for a long time without much change. This condition is usually associated with an emotional state produced by the constant intrusion of the memory of some past incident. An example of this is seen in the case of a man who, after a charge, was placed on outpost duty. It was dark and he was in a state of considerable tension. He heard a noise,

* I have to thank the Medical Research Committee for the interest taken in the work of the hospital and for the assistance rendered in bearing the expense of circulating among the medical officers engaged on military cases of nerve shock a memorandum which has formed the basis of this paper.

which he thought came from some wire in front of him. Suddenly the area around him was illumined by a flare light and he saw a man crawling over the bank. Without challenging, he fired and killed the man. Next morning he found to his horror that he had killed a wounded Englishman who had advanced beyond his comrades and was crawling back. The physical expression of horror, together with an intense sweating and a very marked stammer, persisted for months. At the same time he was tormented with a fearful nightmare, and in his sleep he was heard to say, "It was an accidental shot, sir. Yes, Major, it was not my fault." In the daytime also his attention was concentrated on the memory of the incident, so that "I cannot forget it no matter how I skylark."

An examination back to this trying time which led to his recounting this terrible secret was followed by a marked improvement. The physical signs of the intense emotion gradually disappeared, the vividness of the dreams diminished, and his attention was less concentrated on the one subject. It is interesting to note that the production of a marked emotional state by the death of one of his children led to a recrudescence of all his symptoms—the expression of horror and the stammer—but they disappeared again in a short time.

In some instances the mental disturbance is complicated by the appearance of hallucinations relating to some experience at the front. These hallucinations and the dreams—both frequently occurring in the same patient—hinder the recovery of the patient, but rapid improvement almost invariably follows when an examination is made and the origin of the disorder is explained to him. It is found also that much may be done by educating the patient in a simple way to understand the mechanism of these morbid processes, so as to enable him to appreciate the importance of the emotional elements.

But the prolongation of the illness is not always due to dreams and memories of incidents connected with the war. Of equal, or perhaps of greater, importance in the longer cases are the memories of experiences in their earlier life with which a strong emotional tone was connected. These also may be revived in dreams, and in some instances they are added to the dreams of the incidents which occurred at the front.

In one case of this sort a man was tormented by the memory of an experience which happened to him during the first winter campaign. He and a comrade were carrying a pail of water to the trenches. It was very cold and they set down the pail in order to warm their hands. The comrade placed his hand against the cheek of the patient and said, "That hand is cold." At that moment he was shot dead. This incident was revived not only in dreams at night, but if during the day he were quiet and closed his eyes he could feel the cold hand against his face. He was much distressed by the frequent revival of this incident in such a realistic manner. But he was at the same time troubled by another dream, in which he ran down a narrow lane at the bottom of which there was a well. He dipped his hands into the water, but, on withdrawing them, he was horrified to find they were covered with blood. This dream was connected with a love affair in which his great friend interfered and angered him so much that he attacked him when next they met. He left him on the ground so injured that it was necessary to take him to a hospital. The patient became anxious as to what the result might be and left the district. He went to South Africa and later to America, but never heard whether the man he had attacked had died. The dream troubled him seriously and was difficult to unravel, but this and the one about the cold hand on his cheek disappeared after having been traced back to their origin. The patient made a rapid recovery, and has since been able to bear a severe trial satisfactorily.

The next case* referred to is an interesting example of the way in which, in a patient suffering from a disturbed mental condition following shock, the memory of a past incident led to an enormously exaggerated emotional value becoming attached to a recent occurrence. This patient broke out of hospital after having been refused permission to leave the grounds, and a statement regarding the offence was forwarded to the commanding officer of his regiment. He became very depressed, said he would be disgraced, and that he would commit suicide rather than bring disgrace on his family. Investigation into this emotional outburst showed that his father had deserted the family, had got into prison and "tainted me." As he still remained in a very worried condition a further examination was made, and he confessed to feeling absent-minded and restless. For some time no explanation of this was forthcoming, but at a subsequent interview, after looking outside the door to see that no one was near, he said, "I want to tell you something, sir. Every night I wake to find that I have been restless and have thrown the clothes off the bed; also I find that I have 'lost nature.'" He was perpetually worried over this because he thought "the loss would affect my brain and would drive me mad." He admitted that he had gathered that idea from a book by Dr. X. which he had read years ago. It appeared also that Dr. X. had advertised a special bread and a special medicine which would preserve the nervous system, and that for years the patient had fed himself and his family with the bread and the medicine. But when it was pointed out that the book was written and the bread and the medicine were advertised by a charlatan with the view of making money out of those who were waiting to be duped, the restlessness at night and the "loss of nature" ceased.

The mental condition of this man has become practically normal, and a marked "tic" of the facial muscles and a general tremulousness have disappeared. It should be mentioned that in this case the dreams always began with some terrible experience in the trenches and then turned to some sexual acts with women, usually with his wife, and he awoke to find the clothes disturbed and also that he had "lost nature."

As an example† of hallucinations and delusions being dispelled by tracing them to their source and then giving the patient a clear insight into their nature, we may take a private, aged 31, admitted into this hospital suffering from hallucinations of hearing and delusions of supervision by his family and friends. He heard voices, apparently those of his brother, elder sister, and brother-in-law, telling him what to do and what not to do. The voices sometimes repeated his own thoughts and decisions. He had begun to form a theory about them, and considered that they belonged to a secret police entrusted with the task of supervising his actions and seeing that he did not again transgress as he had done.

An inquiry into his past revealed the following facts. He used to be a bank clerk, and as the result of drinking and smoking too much he had a nervous breakdown five years ago, and on the recommendation of his doctor he was given three months' holiday. While away he went with a prostitute. This was the first and only offence in sexual matters. At first he was not greatly disturbed by the memory of it, but when he went home some months later he thought he could detect a strangeness in the behaviour of his family, as if they knew of his misdeed. He then began to hear voices like those of his brothers and sisters proceeding from the wall, and, becoming rapidly worse and more depressed, he attempted suicide. After spending some months in a private asylum he emigrated to Canada, but was pursued by the voices and had to return to England. At the outbreak of the war he enlisted and went to France; but the voices distracted him so that he could not perform his military duties and he was invalided and sent to this hospital.

This patient during the five months of his residence in the hospital has been treated by the usual method employed here, namely, by seeking the cause of his mental disturbance. This was found in his affair with the prostitute and in his previous drinking. It was explained to him that the basis of his trouble was really the repetition of the memory of these incidents, together with the unpleasant emotional feeling associated with them, which had produced in him a self-reproach. When strongly under the influence of the self-reproach he had attempted suicide, and then the delusion of supervision had become grafted on and systematized. By persistent reasoning and persuasion week by week the process of systematization has been arrested and gradually the hallucinations and delusions have disappeared. The patient now has an insight

* I am indebted to Mr. T. H. Pear for permission to make use of this case.

† I have to thank Captain W. Brown, R.A.M.C., for permission to quote this case.

into the nature and origin of his illness and is to a large extent restored to health.

By means of this series of cases an attempt has been made not only to indicate the forms of mental disturbance observed among the patients admitted to this hospital, but also to show that the term "shock" by no means explains all the conditions of mental illness occurring in those who have returned from the front. Disturbances ranging from a slight, simple shock to a serious condition with hallucinations and delusions have to be observed. The more simple cases, which are popularly spoken of as "shock," recover quickly, but in the majority of instances there remains after the manifestations of shock have disappeared a "residuum," as Wernicke expressed it.

The work which is being done here is directed towards investigating the causes which have led to the persistence of this residuum and towards endeavouring by suitable treatment to assist the patients to recover. In order to understand the conditions we have to deal with it is necessary to consider the various factors which have been active in producing the disturbance. In the first place, it is important to remember that these men have lived through a prolonged period of strain before they have broken down under some special shock, such as the death of comrades at their side, the explosion of a shell near them, or the blowing up of a trench. Incidents such as these, together with the fatigue or exhaustion produced by life in the field, have led to the lowered capacity of resistance or control which is manifest in most of those who come under our care. Owing to their condition of lowered capacity the patients feel that they are not the men they were before the war began; they recognize a change in themselves and describe it clearly. They know that they are irritable, that they are unable to interest themselves or to give a maintained attention to a given subject. Instead of being jovial and social they are solitary and morose; instead of being good-tempered and taking things as they come they are irritable and find great difficulty in controlling themselves. All this is very real to them and leads to a condition of anxiety which is increased by their not being able to understand their condition; they worry because they fear how far this sort of thing may go. As a result they live in a state of expectancy which causes them to exaggerate the trifles of everyday life. Small incidents—slight psychic or physical disturbances which would have passed unheeded before the war—now assume a quite abnormal interest and importance for them.

All the conditions referred to so far can be observed in a merely superficial examination, but a deeper investigation will in many cases demonstrate that various other causes may have participated in producing the illness. These deeper causes—for example, the repeated revival of memories of horrible incidents at the front, terrifying dreams, and also memories of incidents of their past lives—have played a large part in determining and maintaining the disturbed mental condition. Examples of the action of these causes have been given in this paper, and it is perfectly evident that the incidents which have had such a disturbing influence have been those with which an intense emotional state has been associated. Dejerine has suggested that in all cases of hysteria and neurasthenia the cause must be sought in some antecedent emotional condition. The results of the investigations among these patients demonstrate that this principle is capable of a much wider application.

It is the strong emotional factor which so compels the attention of the patient. The normal freedom of their mental activity is interfered with, and in some instances the attention is so fixed on the disturbing influences that the offending memories and their accompanying emotional states cannot be expelled. Then may follow the appearance of hallucinations and the development of delusions which the patient employs to explain his condition to himself, and the repeated dwelling on those delusions leads to a habit of mind which becomes more fixed as time goes on unless some active and suitable treatment is adopted.

While in this state the patient is to a large extent incapable of reasoning about his condition; he is unable to make use of the sum total of his past experiences; he gives way to the emotional states in which he may find himself, or he dwells on the explanation he may have accepted. His difficulty lies chiefly in the fact that he has little or no insight into the nature and mode of origin of his mental illness. This insight can be provided by explaining to him in plain language the mechanism of simple mental processes, by enabling him to understand that every incident is accompanied by its own special emotional state and that this emotional state can be reawakened by the revival of the incident in memory. The patient will thus be led to see that it has been no gross disease and no supernatural agency which has disturbed him; he will be able to recognize the relation of cause and effect in the origin and development of his illness.

When this relation is appreciated both the patient and the physician will begin to realize that they have some ground in common. And this stage being reached, the mystery of the illness will be swept away and the physician will be able to explain to some extent the reason and the mechanism of his loss of control, of his disturbed attention and of his lack of interest, and also to show him how he can educate himself to regain that which was lost The patient will understand that it will not be possible for him to banish the memory completely. But he can be induced to face the trouble, to reason about it, and to recognize it simply as a memory of the past instead of allowing the emotional tone connected with it to dominate him until the condition of anxiety had been produced. The excessive emotional tone will thus be stripped away and the patient will become able to appreciate the real value of the incident, and this will assist him to recover from the condition of confusion, disturbed attention, and anxiety, which, if neglected, may lead to serious results. Further, just as in each case the disturbance can be traced to a specific incident or series of incidents, so the re-education must vary with each in order to overcome the difficulties connected with the specific cause which has been discovered.

The difficulties in the processes of investigation and treatment of these cases are often considerable, and it must be recognized that recovery will not take place in every instance. But the results obtained demonstrate that many mental illnesses recover in a most satisfactory manner under a well-directed and sympathetic treatment. The confidence of the patient must be obtained in order that he may be induced to co-operate in the treatment of his illness. This co-operation is indispensable, and it is extremely interesting to find how readily it can be obtained from patients in whom the illness has lasted only a short time. And when the difficulties, often insurmountable, which are encountered among those in whom the mental disorder has become fixed and systematized are considered, the value of the early treatment of mental disturbances in a hospital by an efficient staff who devote their whole time to the work, at once becomes manifest. The physician should be prepared to give at least an hour for an interview and in most instances several interviews will be necessary. Short cuts may be attempted; they rarely lead to success. A prolonged study of each separate case will not only provide a means of treatment for the individual, but will also collect a mass of evidence which will help to develop a new and enlarged view of psychological medicine.

MENTAL SYMPTOMS COMPLICATING A CASE OF ACUTE TETANUS DURING TREATMENT BY CARBOLIC INJECTIONS.

BY

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THANKS to the valuable prophylactic effect obtained by prompt injections of specific antitoxin, cases of tetanus occurring among the wounded in the present war are quite infrequent. Consequently I offer no apology for publishing notes of the following case:

On November 11th, 1915, while unloading an ammunition wagon on the lines of communication, Gunner C. was struck by fragments of a high-explosive shell, which exploded close to him. He was severely and extensively wounded in the right buttock, right thigh, and right foot, as well as in the left leg. The wound of the right foot was very severe, the fragment of

shell having torn most of the extensor tendons and laid open the ankle-joint.

Earlier in the war it was the custom to make careful inquiries as to whether or not a wounded patient had received a prophylactic injection of antitetanic serum. The administration of these injections has become so much the invariable practice at the front that in the base hospitals one has ceased to ask the question.

Thus it happened that it was not until the occurrence in this case of subsequent events that one was led to investigate the question. The patient did not remember having received an injection; but it is possible that it was given while under an anaesthetic at the time of his first operation in France, or, on the other hand, it may have been that, wounded as he was far behind the firing line, he missed receiving treatment at a field ambulance or at a clearing station.

He came under my care at the 4th London General Hospital on November 16th, 1915, five days after he was wounded. For some days the wounds, which were extremely septic, were treated by peroxide irrigation and boric fomentations.

Six days later—on November 22nd—some trismus and a definite risus sardonicus were noted. He was at once given 4,000 U.S.A. units of antitetanic serum, and 1 c.cm. of 1 in 20 carbolic acid was injected subcutaneously every four hours. He received a further 1,500 units of serum the same evening.

Had it been possible to localize the focus of infection as being in the wound of the foot, it would have been an easy matter to amputate immediately, especially as the foot was so severely injured that the prognosis was not hopeful. But in the presence of other septic wounds, any one of which might be equally the source of infection, it seemed to me wiser to secure efficient drainage everywhere by means of opening and irrigating thoroughly the wounds of the thigh and buttocks, and by an astragalectomy on the foot.

After the initial symptoms the march of events was rapid. The muscles of the abdomen and back were strongly contracted, and convulsions occurred frequently. On the evening of November 23rd he was given 1,500 units, as well as a quarter of a grain of morphine and 2 drachms of chloral. The pain in the back and leg was severe. On November 24th he had a further 1,500 units of serum, chloral, and bromide every six hours and morphine in the evening. The same course of treatment was pursued on November 25th. On November 26th and 27th the patient remained in a semi-comatose state from the effects of the chloral and bromide. Whenever he was allowed to come round at all the spasms became intense; on November 28th they were less severe, and on November 30th he was treated less energetically with hypnotics. The mental condition now began to show a marked change. He became extremely restless and passed into a state of low, muttering delirium, with visions and hallucinations—a condition closely resembling delirium tremens. From time to time he attempted to get out of bed, and had to be forcibly restrained. This lasted for five days, during which time he had incontinence of urine and faeces. Chloral and bromide, which had previously quieted him, had now no effect. After four four-hourly doses of half a drachm of paraldehyde, however, he settled down into a quiet sleep.

On December 7th incontinence had ceased and he had regained a more normal mental state. Paraldehyde was continued every four hours until December 8th, as well as occasional injections of morphine and atropine and draughts of chloral. On December 9th the mental condition appeared normal, but on December 10th there was a bad relapse with more incontinence. This lasted acutely for three days, but it was not until December 20th that the mental state again became normal and he was able to recognize those around him.

With the exception of the single shell explosion noted above, the man had never been under fire. This fact, as well as the delay in onset of the mental symptoms, tends to show that they were not due to shell shock. On the other hand, I am not familiar with the occurrence of such a form of delirium as being a symptom of tetanus itself. This is also the experience of those of my colleagues with whom I have consulted. I have thought it possible that the carbolic acid injections may be not unassociated with the condition.

Injections of 1 c.cm. of 1 in 20 carbolic acid were given at four-hourly intervals from November 22nd till December 4th. At no time, however, were there any other symptoms of carbolic acid poisoning.

The patient's general health is now (February) perfect, and there is no trace of mental instability. The movements at the ankle are quite good, and with his remaining extensors he is able to carry out a fair degree of dorsiflexion.

THE Secretary of the United States Treasury, Mr. W. G. McAdoo, has transmitted to the House of Representatives, on behalf of the Public Health Service, a recommendation for an emergency appropriation of £20,000 for the promotion of rural sanitation with the object of checking the spread of pellagra and typhoid fever.

A CASE OF ACUTE GANGRENOUS CHOLECYSTITIS WITH SPREADING PERITONITIS

OCCURRING IN THE EPIDEMIC OF JAUNDICE, GALLIPOLI, 1915.

BY

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With Observations on the Pathological Findings in their Relation to the "Epidemic" Jaundice of the Dardanelles.

BY

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CASES of ascending infection of the bile ducts, liver, and gall bladder became extremely common during October, 1915, amongst our troops on the Gallipoli peninsula. The cases, as we met with them in the early days of their illness, may be grouped clinically into three categories:

1. Jaundice, associated with a variable degree of pyrexia, and usually enlarged and tender liver.
2. Acute cholecystitis without jaundice.
3. A combination of the first two types, with jaundice accompanied by acute cholecystitis.

According to our observation, the three classes occur with a relative frequency that corresponds with the order given above, though the patients with cholecystitis may well develop jaundice at a later stage. The following case is reported in order to draw attention to the danger of an acute gangrenous inflammation of the gall bladder—a condition which is in any event of extreme gravity, and, apart from prompt surgical intervention, is almost inevitably fatal from general peritonitis.

Case.

Pte. S., R.A.M.C.(T.), aged 22, reported to one of us (F. B. S.) on sick parade on October 5th, 1915, complaining of the following symptoms: (1) Pain in the epigastrium that had been constant, slight, and aching in character for four or five days; (2) a cough that was worse at night, aggravating the pain; (3) general malaise, anorexia, and slight headache for the same period. There was no history of vomiting, though there had been occasional nausea and retching after food. There was nothing irregular in the frequency and character of the urine or faeces, though he had suffered from diarrhoea a few weeks before. He had been inoculated against typhoid (two doses) about twelve months before.

On examination the temperature was normal. There were no abnormal physical signs in the chest. The tongue was not quite clean, and there was indefinite epigastric tenderness. He was treated as a case of simple indigestion.

On the following day the symptoms were the same, and the temperature still normal. On the morning of October 7th he complained of pain across the lower chest on respiration. The temperature was 99.2°. The chest was quite clear. The epigastric tenderness was more marked but not definitely localized. The tongue was coated yellow, and there was a left follicular tonsillitis. That evening the man complained that his pain was worse, and he was admitted to the dressing station tent with a temperature of 102° F. During the night the pain grew worse, and the patient vomited several times.

On the morning of October 8th he was evidently very ill indeed. The temperature was 102.8°, pulse 120, and he was flushed and showed a marked "abdominal facies." On

examination of the abdomen respiration was shallow, jerky, painful, and limited to the thorax, the abdomen being almost immobile. On palpation there was general abdominal tenderness and rigidity, but all down the right side it was most marked, and in the right hypochondrium the tenderness was peculiarly exquisite. Percussion did not reveal any shifting dullness in the flanks. The liver dullness was more limited than usual.

Perforation of an inflamed gall bladder with spreading peritonitis was diagnosed, and the patient was removed to the main dressing station of the 1st East Lancashire Field Ambulance for immediate operation.

Operation.—Captain J. M. Postlethwaite anaesthetized with chloroform, and Captain Haskins assisted. Subcutaneous saline was given into the left axilla during the operation. A vertical incision through the right rectus was made over the gall bladder. A considerable quantity of turbid, foul-smelling, bile-stained fluid was found in the peritoneum in the right kidney pouch, extending down into the right iliac fossa and pelvis. The gall bladder, which proved to be unusually difficult of access, because so far back under the liver, and adherent, was examined after the peritoneal cavity had been packed off with gauze. It was distended and deeply congested. It showed no gross perforation, but on its inferior aspect, showing up in marked contrast against the surrounding purple, was a green gangrenous area rather larger than a shilling, with two or three smaller discrete patches of gangrene round it. No gall stones were present. The liver was normal in colour and consistency, and was not enlarged. Cholecystectomy was hardly feasible owing to the anatomical peculiarity of the case and the lack of appropriate instruments, so a drainage tube was inserted through the gangrenous patch near the fundus and sutured in. The gall bladder contained somewhat turbid, foul-smelling bile under considerable tension. A gauze drain was inserted alongside of the tube in the gall bladder, and the peritoneal cavity swabbed dry. The abdomen was closed with through-and-through silkworm-gut sutures.

Progress.—Rectal salines were given every four hours for the first twenty-four hours, and the patient was kept propped up in the Fowler position. Bile drained away freely, but two days later the patient was perceptibly jaundiced, though it soon faded. He improved at first. The abdomen became soft and mobile, the bowels were freely moved, and it was evident that there was no further peritonitis, though there was some suppuration in the abdominal wall. But the temperature remained high, and a typical clinical picture of severe typhoid fever gradually developed. For about ten days the temperature varied between 103° and 105°, with a pulse of 120 to 130. There were frequent loose motions, he was greatly prostrated, and the condition was complicated by an area of pneumonic consolidation at the base of the left lung, with a small serous effusion in the pleural cavity. Towards the end of the third week of his illness, however, the temperature began to drop and the pulse to improve, and at the time of writing (October 29th), though very emaciated, and still too weak for removal to a hospital ship, we hope that he is fairly on the way to ultimate recovery. The main credit for this is due to his nursing orderlies, and particularly to Lance-Corporal Gregory, R.A.M.C.(T.), who has shown the most unremitting care and devotion in a very difficult case.*

Pathological Investigation.

A specimen of fluid from the gall bladder and subsequently several specimens of faeces and one of blood, for examination by cultural methods, were submitted to Lieutenant William Campbell, M.B., Ch.B., R.A.M.C., at the Pathological Laboratory, Cape Helles, and we are greatly indebted to him for the following reports:

Specimen of Fluid from Gall Bladder (October 16th).

1. I have been unable to find any entamoebae.
2. *Micrococcus tetragenus* is present.
3. *Staphylococcus pyogenes albus* is present.
4. The only other organism isolated is an organism giving the cultural reactions of a paratyphoid bacillus and agglutinating up to titre with the agglutinating serum of *B. paratyphosus* B (1-4,000 Lister Institute paratyphoid B serum). Isolation of this organism was easy, and it is likely that it was present in greater numbers than either *M. tetragenus* or *S. pyogenes albus*, owing to the number of colonies of this organism (paratyphoid B) which came up on plate cultivation. *B. coli communis* was not isolated, and the above represent the total findings.

October 24th. The blood culture taken from the above case (October 21st) has remained sterile.

Three specimens of faeces (No. 1, No. 2, and No. 3) were sent to the laboratory on October 19th, 20th, and 21st respectively.

Specimen of Faeces No. 1 (October 19th).

Report.—Thin, offensive stool, showing no blood or mucus to the naked eye. Microscopically, no entamoebae found. Active *Trichomonas hominis* crowds all the fields examined. No blood cells were found. Specimens plated on MacConkey's and on Endo's medium on October 19th. Likely colonies picked off after culture and examined further.

Result (October 24th): *B. paratyphosus* B isolated.

Specimen of Faeces No. 2 (October 20th).

Report.—Naked-eye appearances: Pea-soup type of stool; no blood and no mucus seen. Microscopically, active *Trichomonas hominis* present in large numbers: entamoebae present in small numbers. No blood cells found. Specimen plated on MacConkey's medium, October 20th.*

Specimen of Faeces No. 3 (October 21st).

Report.—Naked-eye appearances: As in Specimen No. 2. Microscopically, active *Trichomonas hominis* present in large numbers; entamoebae (cysts) present in small numbers; no blood seen. Specimens plated on MacConkey's medium and on Endo's medium, October 21st.*

* Since *B. paratyphosus* B has been isolated from the specimen of faeces No. 1, and as no other organisms of the typhoid or of the dysentery group were isolated from it, I do not think it necessary to carry the examination of specimens No. 2 and No. 3 further.

The above pathological report is of great value in that it may indicate the nature of the infection that gives rise to a considerable proportion of cases in the epidemic under consideration. Our specimen of bile was sent to Lieutenant Campbell with a request that he should look for the entamoeba of dysentery or any other organisms present, and we had no suspicion of paratyphoid before receiving his report. On clinical grounds there was a good deal of presumptive evidence for the view that the cases constituting this epidemic may be secondary to dysentery and due to the entamoeba. The great majority of patients with jaundice or cholecystitis give a history of dysentery or diarrhoea, commonly ceasing two to four weeks before the hepatic symptoms began. But few men who have been many weeks on the peninsula have not had some diarrhoea or dysentery at some time, so that too much weight cannot be given to the suggestive association of the two epidemics. We have, moreover, found a few patients with epidemic jaundice who deny having had any diarrhoea or dysentery at all during the campaign. It is plain that the etiological problem is essentially one for the laboratory, and it is only from cases requiring operation, or from *post-mortem* examinations, that the necessary material from the biliary tract can be obtained. Without claiming for a moment that this very important etiological problem can be settled by the evidence forthcoming from a single case, the presence of *B. paratyphosus* B in the gall bladder in great numbers is an arresting and suggestive fact that should be borne in mind in further investigations. If it should be established from a series of cases that the most serious cases in this epidemic are due to this organism, it may prove possible by prophylactic inoculation to save our troops from this disease.

Observations on the Pathological Findings in their Relation to the "Epidemic" Jaundice of the Dardanelles, by WILLIAM CAMPBELL, M.B., Ch.B.Edin., B.Sc.(P.H.), Lieutenant R.A.M.C.

If any medical officer serving in the zone of active operations on the Gallipoli peninsula were asked to mention those medical conditions which, from the number of cases affected by them, were of greatest importance, he would immediately answer: (1) Diarrhoeal diseases, (2) pyrexias of uncertain origin, (3) jaundice (? epidemic), and he would inevitably add the remark, "In October, 1915, the numbers of cases of jaundice had been so remarkably large that they constituted a definite epidemic." I have queried the term "epidemic" above because it is exceedingly doubtful whether these cases form a true epidemic in the sense in which I have been accustomed to accept the term.

The designations "Weil's disease" and "epidemic jaundice" are commonly used by medical officers to describe the cases of jaundice occurring, and many such cases came from the trenches to the clearing station with one or other of these two terms already marked on their tickets.

If by "epidemic" it is meant that many cases of jaundice occurred amongst the troops in a given area, then the use of the term may be defensible; but if it be

* NOTE.—Since these notes were written (October 29th, 1915) we have been informed that the patient died in hospital in Alexandria.

implied at the same time that the cases are in any sense infectious in character, there can be no doubt that the qualification "epidemic" should be given up unless and until the jaundice be proved on epidemiological and bacteriological grounds to be so.

While numerous cases of jaundice showed no elevation of temperature, there were very many others accompanied by definite pyrexia. This latter fact would seem to point to some organismal cause, especially as in a few cases which have been observed an antecedent pyrexia has been noticed during the two or three days immediately preceding the appearance of yellow coloration of the conjunctivae and skin.

There is at present little to support the view that the jaundice is haematogeneous in origin, and the probability that most of it is due to ascending infection of the biliary apparatus (catarrhal jaundice) is strong. This may be stated with emphasis, because, as Captains Morley and Smith have pointed out above, practically every one who has been a short time on the peninsula admits to having suffered from diarrhoea of some description; and it is an interesting fact that, with the advent of the colder weather, the decrease in the number of cases of diarrhoea *from all causes* marched practically *pari passu* with a corresponding increase in the number of cases of jaundice.

Regarding this, attention may be drawn to the view mentioned above, and based on clinical grounds, that there is a good deal of presumptive evidence that the cases constituting the epidemic may be secondary to dysentery, and due to the entamoeba. But, while it is true that of those cases of diarrhoea the causes of which have been ascertained in the laboratory amoebic dysentery has formed a large proportion, it must be borne in mind that far from all the diarrhoeal cases are of amoebic origin; and it is to be noted that cases of enteric fever due to the paratyphoid organisms (including a smaller number due to *B. typhosus*), the smaller number of diarrhoeal cases which have been due to the Shiga-Flexner group of bacilli, the few cases due to the trichomonas, and finally those cases whose specific cause could not be ascertained by the bacteriologist, all go to make up the complement of diarrhoeal diseases *from all causes*.

If, then, it be sound to take the apparent parallelism between the incidence rate of diarrhoeal diseases from all causes and that of the so-called "epidemic" jaundice as indicating some relation between the two, it is reasonable to suppose that it is unlikely that the cases of jaundice have a uniform bacteriological cause.

Further, it was a matter of common knowledge on the peninsula that amongst apparently healthy individuals, even in those cases who have had no actual diarrhoea, a condition of chronic laxity of the bowels, unaccompanied by pyrexia, in which two or three bulky pultaceous motions were passed daily, was practically universal. This fact indicates that a very large amount of refuse matter is being got rid of, and would therefore seem to point to the diet containing too much indigestible material. But, as the army diet is reasonably good in quantity and quality, it rather points to there being some underlying catarrhal inflammation of the gastro-intestinal tract, which again is in favour of the view that much of the jaundice is due to ascending infection of the common bile duct from the intestine. It is improbable, therefore, that all cases of "epidemic" jaundice are due to a single specific organism.

On the other hand, the occurrence of numerous cases of cholecystitis, with or without jaundice, is striking, and these cases of cholecystitis may afford a possible clue to the cause of some of the cases of "epidemic" jaundice in that they may be due to an organism whose growth is favoured by bile. Such an organism, having multiplied in the gall bladder, might very well produce a secondary descending infection of the common bile duct.

It must be remembered, however, that, as there have been many cases of amoebic (*Löschia histolytica*) dysentery, and that as numerous individuals, who have not suffered from actual dysentery, harbour the entamoeba in their intestines, many cases of cholecyst tis may represent the so-called "hepatitis," which is characterized by pyrexia and by tenderness in the right hypochondrium, and recognized as being a frequent complication of amoebic dysentery. Indeed Captains Morley and Smith have referred above to the tentative suggestion that the epidemics of cholecystitis and of jaundice may be in large part secondary to dysentery and due to the amoeba. At the same time, I am not aware that jaundice has been found in places, where amoebic dysentery is endemic, to be a particularly common sequel of infection with the entamoeba.

It will be gathered that, while the etiology of the "epidemic" jaundice of the Dardanelles is still uncertain, the problem of its elucidation gives great scope for laboratory investigations, especially to those bacteriologists who are fortunate in working at the base hospitals, where the cases can be kept for some time and who have quiet and settled conditions in which to prosecute their work. The matter can only be cleared up in the laboratory, for it must be granted that, from the clinician's point of view, the problem is not simple because he finds his cases of jaundice complicated in various ways.

For instance, the jaundice may be slight or pronounced in degree, the duration may vary from one or two days up to several weeks, and it may or may not be associated with one or more of the following conditions:

(*a*) *Pyrexia of indefinite character;* sometimes transient, but frequently of the nature of a low continued fever. Many cases, however, are afebrile and some run a subnormal temperature.

(*b*) *Digestive disturbances* (generally present); usually marked; evidenced in some cases by nausea and anorexia only, in others by intestinal colic, and in a few by diarrhoea.

(*c*) *Cholecystitis*, with marked tenderness in the right hypochondrium; pain sometimes referred to back as well.

Captains Morley and Smith have noted above that cases of jaundice following an attack of cholecystitis, as well as other cases of acute cholecystitis without jaundice, are also met with. Further, medical officers find that in nearly all cases of jaundice the patient gives the information that he suffered from diarrhoea and colic at some time or other on the peninsula, but, owing to the prevalence of diarrhoeal diseases, this is not to be wondered at.

Broadly speaking, the cases of "epidemic" jaundice might be divided into two groups:

1. Jaundice with pyrexia.
2. Jaundice with no elevation of temperature.

It is doubtful, however, whether this classification would help us, for the problem is complicated by the fact that temperatures of irregular type and uncertain origin are by no means uncommon, and occur equally in patients with and without jaundice. Again, typhoid fever occurring in inoculated cases shows itself as an atypical and generally abortive fever. The same is true in some degree of enteric fever due to the paratyphoid organisms, because, although the immunity conferred by antityphoid inoculation has been regarded by some as being homologous, and although many paratyphoid infections occurring in patients inoculated against *B. typhosus* give a good clinical picture of enteric fever, there is strong evidence for believing that antityphoid inoculation gives a partial immunity to the paratyphoid fevers, and that, therefore, many atypical and abortive cases of these in all probability occur as well.

It follows from these facts that the diagnosis of febrile conditions has become much more difficult for the clinician, who too often finds himself left in doubt as to what value should be placed on many a temperature chart for diagnostic purposes. This is true generally, and it is true of cases of jaundice with pyrexia. The classification of cases of "epidemic" jaundice into febrile and afebrile varieties may on this account not be of so much value to him as might at first appear.

Pyrexia occurring in these cases indicates the facts (*a*) of infection and (*b*) of reaction on the patient's part; but cases of mixed infection are not unknown, and the temperature chart may therefore indicate reaction not to one but to several organisms. Or, in cases of mixed infection, the reaction may be to one organism, while other ordinarily pathogenic organisms found in such cases may be mere saprophytes in the intestine. In respect of this it will be noted that, in the case recorded above, *B. paratyphosus* B occurred in the faeces in conjunction with *Trichomonas hominis* and *Entamoeba histolytica*.

The first specimen sent to me from this case was one of bile, and from it *B. paratyphosus* B was isolated, as well as *Micrococcus tetragenus* and *Staphylococcus pyogenes*

albus. The two organisms last named I regard as contaminations. No organism was obtained from the blood culture taken from the same case.

Without attempting to assess to the *Trichomonas* and the *Entamoeba* in this particular case their pathological value (if any) in the production of the gangrenous cholecystitis, it seems fair to regard the *B. paratyphosus* B as having been the cause of the condition. To the clinical pathologist who has had the opportunity of seeing patients with "epidemic" jaundice, the case suggests one or two points which I shall now discuss very briefly.

As is generally recognized, catarrhal jaundice commonly occurs without cholecystitis; similarly, cholecystitis is very frequently unattended by jaundice. Both facts are capable of a simple anatomical explanation. But in some cases in the Gallipoli epidemic jaundice followed a definite cholecystitis, and one hears as well of numerous cases of jaundice in which a history of troublesome spasmodic pain in the right hypochondrium, highly suggestive of an antecedent cholecystitis, was obtained. It may therefore be that the relation between the cholecystitis and the jaundice is of greater importance than has been recognized hitherto, and it is possible that cases of cholecystitis treated by operation will furnish to the bacteriologist the most hopeful material for the solution of an etiological enigma.

From this point of view the case recorded by Captains Morley and Smith may be of special value. It shows, at all events, that in a patient inoculated against typhoid fever a paratyphoid organism in the early days of infection may ascend from the intestine to the gall bladder and there settle without causing more than an initial and indefinite epigastric tenderness associated with anorexia and headache; that later its numbers and virulence may be so increased as to cause actual gangrene of the gall bladder; and that, therefore, it is not improbable that from the gall bladder, in cases of cholecystitis, a subsequent descending infection of the common bile duct with consequent jaundice may take place—an infection due to an organism which has meantime been multiplying in the bile. This may explain numerous cases of jaundice with pyrexia, especially those cases which give a history suggesting a previous cholecystitis.

It is likely, then, that a close study of those organisms whose growth is known to be favoured by bile may help to enlighten us as to the cause, or causes, of the "jaundice with pyrexia' which occurred in the Dardanelles; and, although jaundice is not a common complication of ordinary typhoid fever, it is possible that the paratyphoid infections may play a much more important part than the *B. typhosus* in the production of febrile jaundice. The possible connexion between the "carrier" problem and the occurrence of febrile jaundice suggests itself; and it would be interesting to know how many cases of "epidemic" jaundice, bacteriologically examined, have yielded a paratyphoid organism.

Be this as it may, I am for various reasons strongly of the opinion that it is highly improbable that the cases of jaundice occurring in the Gallipoli "epidemic" have, by any means, a uniform specific bacterial cause.

REMOVAL OF INTRACRANIAL FOREIGN BODY UNDER X RAYS.

BY

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THE following case of gunshot wound of the head, with a piece of shell in the brain, illustrates the value of the use of an electro-magnet or *x*-ray screen for removal.

A lance-corporal received a gunshot wound on September 25th, 1915, in France. The piece of shell entered the skull about the middle of the left temporal region. He had an injection of antitetanic serum four hours after the injury. When admitted to this hospital on October 9th he was conscious, complained that he could not sleep, and that he had considerable pain. The superficial wound in the side of the head had healed. The temperature was 99° and the pulse 60. Next morning he vomited.

A skiagram taken on October 11th showed some depressed fragments of the internal table round a small hole in the middle of the squamous portion of the left temporal bone, and the shadow of a piece of shell about ½ in. by ¼ in. was seen on the plate 1 in. behind the hole and 1½ in. beneath the surface.

On October 13th Mr. Leslie Paton examined the eyes (pupils not dilated) and found: The right optic disc, highest point + 3 D., edges blurred, veins distended, general retina + 5, swelling 2½. Left optic disc, highest point + 5 D., general retina +1, swelling + 4. The patient had sensory aphasia, word-blindness, but no apraxia.

Operation.

A large temporal flap was made, and the opening in the skull enlarged; pieces of depressed bone were removed, the torn edges of the membranes were opened up, and about 2 oz. of thick pus under pressure escaped. The piece of shell could not be felt with the probe, and a rubber tube was put in and free drainage established.

On October 15th another skiagram showed that the piece of shell had dropped further back in the abscess cavity into the occipital lobe. The temperature at this time varied between 97° and 99°, but on October 23rd the evening temperature was 100°, on October 24th 101°, and on October 26th 102°; it then became normal and has remained so ever since. The pulse-rate varied between 64 and 100, and after October 26th was from 72 to 80. On October 23rd the eye appearances were: Right optic disc, highest point + 3.5 D.; left optic disc, highest point + 4 D.; veins still much distended.

A probe was passed down along the abscess track, and a stereoscopic skiagram taken.[1] The fragment of shell was found to be lying in the occipital lobe, one eighth of an inch in front of the tip of the probe and half an inch mesial to it. A steel probe was then passed down the track, and an electro-magnet capable of lifting 14 lb. weight was applied to the probe and held in position for a few seconds, but the bit of shell was not drawn out by this means.

It then seemed to me that it might be possible to see the fragment, and remove it under the *x*-ray screen, and, after consultation with Dr. Florence Stoney, the radiologist to the hospital, the attempt was made on November 9th. The steel probe was again passed in along the track, and I was able quite clearly to see the probe and the fragment. It was found that the latter had been pulled forward by the magnet, and caught in brain tissue. A crocodile forceps was then passed along the track to the depth of four inches, and after some manipulation the piece of metal was seized and removed. The patient was not under anaesthesia and felt no pain, except just as the sharp edges of the fragment came into contact with the edges of the superficial wound.

On November 13th the patient's general condition was quite good. On November 17th the wound had healed; aphasia was less marked, but he still had some slowing of mental cerebration, and at times difficulty in naming articles, with some loss of memory in naming places and for recent events. The eye symptoms were: Right optic disc still blurred; swelling subsided very much; highest point of disc + 2 D., general retina ametropic; small linear haemorrhages especially in lower part of disc; left optic disc still all blurred; subsidence not so marked in appearance as in the right eye; swelling, highest point of disc + 2 D.; some haemorrhages.

The two practical points demonstrated are: First, the use of an electro-magnet for the removal of portions of shell which are capable of being so attracted; and, secondly, the fact that bits of metal can be demonstrated inside the skull, although the *x* rays have to penetrate two layers of bone; the surgeon may thus receive very material assistance in such cases by seeing the relationship of fragment to instruments during actual removal.

My thanks are due to Dr. Florence Stoney for the excellent skiagrams and help with the screen; to Dr. Leslie Paton, who kindly worked out the eye conditions; to Major Parsons, the Officer-in Charge, and to Colonel Peterkin, the D.D.M.S., for permission to publish this case.

[1] One skiagram was reproduced in illustration of a report of this case published in the *Journal of the Royal Army Medical Corps*, January, 1916.

DR. ALLEN WALCOTT has contributed an article on beri-beri in the Amazon basin to the *Journal of the American Medical Association* for December 18th, 1915. He has been for six years in the employ of the Madeira-Mamore Railway, which runs through a dense tropical forest along the east bank of the Madeira River 1,500 miles from the mouth of the Amazon. There is a hospital at Candelaria on the line, but no other for many hundred miles in any direction. Out of 30,430 admissions in four years, 963 cases were diagnosed as beri-beri. On the strength of his own previous experience of this disease in San Francisco and Panama, Dr. Walcott concludes that beri-beri in Brazil is of the same type as is found elsewhere, and its cause is the lack of vitamines in the food. The doctors, nurses, and labourers in the medical department have been completely free from attacks of the disease for the last three years, protected by the special precautionary measures used in other lands where it prevails. These measures are described in detail by Dr. Walcott.

PARACHOLERA.

BY

ALDO CASTELLANI, M.D., M.R.C.P.

THIS term was introduced by me some years ago to denote cases which, though clinically hardly distinguishable from cholera, are due to vibrios somewhat different from true *V. cholerae* (Koch). As well known for many years, vibrios have been described which are somewhat different from Koch's germ, and Hewlett, Cunningham, and myself have suggested that the disease may be due to a group of closely allied vibrios. I will not consider in this paper the numerous cholera-like vibrios found in water, and will limit myself to supposed pathogenic vibrios found in the stools of cases presenting cholera-like symptoms. The most important of these vibrios are the following:

1. *Finkler and Prior's organism*, isolated from cases of so-called cholera nostras in Germany many years ago. Its pathogenicity has been doubted by several observers. According to certain authorities, it would appear that the original strain has been lost and that no modern serological tests have been carried out with it.

2. *Pasquale's Vibrio massahuae*, isolated from cases clinically indistinguishable from true cholera in Massowah in 1895. According to Pasquale, the organism differs from *V. cholerae* (Koch) in having two terminal flagella at each end. Durham found that this vibrio was serologically identical with a vibrio isolated from the water of certain German rivers by Dumbar.

3. *Ruffer's vibrios.* Ruffer has isolated certain vibrios from Mohammedan pilgrims returning from Mecca and suffering from various diseases, but with no cholera symptoms. He has compared these "El Tor vibrios" with vibrios he has isolated from other sources, and distinguishes four groups. Neufeld and Haendel, however, having examined some of these vibrios, consider that they are true cholera.

It must be noted, as observed by Grieg, myself, and others, that in cases of true cholera, together with true *V. cholerae*, vibrios may be isolated which are not agglutinated by cholera serum.

Vibrio kegallensis (*Castellani, 1913*).

This vibrio, for which I suggested also the name *V. paracholerae*, has been isolated by me, as stated in previous publications, from cases in Ceylon clinically scarcely distinguishable from cholera, with profuse serous diarrhoea, severe vomiting, muscular cramps, etc. It was very abundant in the stools and the only species of vibrio

TABLE I.—*Showing the Principal Characters of Three Strains—Serologically Identical—of V. kegallensis and Seven Strains of Serologically True Cholera.*

	V. kegallensis.			True Cholera Vibrios.						
	Strain 1.	Strain 2.	Strain 3.	No. 1 (Saigon).	No. 2 (Ceylon).	No. 3 (Ceylon).	No. 4 (Ceylon).	No. 5 (Ceylon).	No. 6 (Ceylon).	No. 7 (Ceylon).
Motility	+	+	+	+	+	+	+	+	+	+
Litmus milk ...	A Pt C	A s Pt C	A s Pt C	A s	A s	C	A	A C	A C	A
Lactose	A–K	A	A vs	A s	A s—K	A	A	A s	A s	A
Saccharose ...	A	A	A	A	A	0	A	A	A	0
Dulcite	0	0	0	0	K	K	K	K	K	K
Mannite	A	A	A	A	A	A	A	A	A	A
Glucose	A	A	A	A	A	A	A	A	A	A
Maltose	A	A	A	A	A	A	A	A	A	A
Dextrine	A vs	A	A vs	A	A vs	A	A vs	A	0	0
Raffinose	0	0	K	0	0	K	K	K	K	K
Arabinose ...	A	A	A	0	K	A vs	0	K	A vs	A vs
Adonite	0	K	0	0	0	K	K	K	K	K
Inulin	0	K	0	0	0	K	K	K	K	K
Galactose	A	A	A vs	A	A	A	A	A	A	A
Sorbite	0	K	0	0	0	K	K	K	K	K
Laevulose	A	A	A	A	A	A	A	A	A	A
Inosite	0	K	0	0	0	K	K	K	K	K
Salicin	A	K	0	0	0	K	K	K	K	K
Amygdalin ...	A	0	0	0	0	K	K	K	K	K
Isodulcite	0	0	0	0	0	K	K	K	K	K
Erythrite	0	0	0	0	0	K	K	K	K	K
Glycerine	A	0	0	A vs	A vs	0	0	K	0	K
Indol	0	0	0*	+	+	+	+	+	+	+
Voges-Pro. ...	0	0	0	0	0	0	0	0	0	0
Red nitrates ...	0	0	0	+	0	+	+	+	+	+
Neutral red ...	0	0	0	0	0	0	0	0	0	0
Gram	0	0	0	0	0	0	0	0	0	0
Gelatine	+	+	+	+	+	+	+	+	+	+
Serum	+	+	+	+	+	+	+	+	+	+
Broth	T	G T P	G T P	G T P	G T P	G T P	G T P	G T P	G T P	G T P
Peptone water ...	G T	G T	G T†	G T P	G T P	G T P	G T P	G T P	G T P	G T P

* Or trace.

† Or P very slight.

ABBREVIATIONS.—A = Acid. C = Clot. K = Alkaline. A—K = Acid then alkaline. T = Turbidity. G T = General turbidity. P = Pellicle. Pt C = Upper portion peptonized and clot at the bottom (milk). s = Slight. v s = Very slight. 0 = Negative result—namely, neither acid nor clot in milk, neither acid nor gas in sugar media, non-production of indol, non-liquefaction of serum or gelatine as the case may be.

TABLE II.—*Showing Agglutination Limits of Serums Derived from Hyperimmunized Rabbits.*

Serums.	*V. kegallensis* Strain 1.	*V. kegallensis* Strain 2.	*V. kegallensis* Strain 3.	*V. cholerae* Strain 1.	*V. cholerae* Strain 2	*V. cholerae* Strain 3.	*V. cholerae* Strain 4.	*V. cholerae* Strain 5.	*V. cholerae* Strain 6.	*V. cholerae* Strain 7.
Kegallensis Strain 1...	2,000	2,000	1,600	0	0	0	0	0	0	0
Kegallensis Strain 2....	2,000	2,000	2,000	0	0	0	0	0	0	0
Kegallensis Strain 3...	2,000	2,000	1,600	10	0	0	0	0	0	0
True cholera (Berne)	10	20	20	>4,000	>4,000	>4,000	>4,000	>4,000	>4,000	>4,000

present. It was found also in the water of a well in Matale, near which a small epidemic of cholera-like cases occurred. The germ is microscopically and culturally very similar to *V. cholerae*. It is very motile, like true cholera, and it is easily stained by the usual dyes; it is Gram-negative. In stained preparations it has the same shape as the true cholera vibrio, but is perhaps slightly larger and thicker. On agar and gelatine and serum the growth is similar or identical to true cholera. Gelatine and serum are liquefied. Milk is generally rendered acid and clotted or peptonized. In peptone water the pellicle is very slight or absent. The germ does not produce indol, or only an extremely slight trace. It must be remembered, however, that certain strains of true cholera vibrio may produce only a very slight amount of indol, and may practically produce no pellicle in peptone water. The production of haemolysis is inconstant with all the strains of *V. kegallensis* I have examined.

Serological Reactions.

V. kegallensis is not agglutinated by true cholera serum in dilutions higher than 1 in 10 or 1 in 20; cholera vibrio is not agglutinated by *V. kegallensis* serum. The absorption test and Pfeiffer's test confirm the results obtained by the agglutination test.

Pathogenicity.

I have been unable to reproduce the disease in the lower animals by feeding experiments, but, as is well known, this is the case also with true cholera. Considering that the vibrio was present in the stools of the patients in enormous numbers, and was the only species of vibrio present, the probabilities are, in my opinion, that it is pathogenic.

CONCLUSIONS.

1. The term "paracholera," as I suggested some years ago, might be used to denote cases of cholera-like diseases due to vibrios, which are specifically different from *V. cholerae* (Koch), though closely allied to it.

2. In Ceylon cases of paracholera occur which in all probability are due to *V. kegallensis vel paracholerae*.

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A CASE OF CHRONIC NON-TUBERCULOUS PERITONITIS IN A CHILD.

BY

CECIL WORSTER-DROUGHT, B.A., M.B., M.R.C.S.,

LATE HOUSE-PHYSICIAN OF THE EVELINA HOSPITAL FOR CHILDREN, ETC.

As I am unable to find any record of a precisely similar condition to that which occurred in the following case, I venture to consider it sufficiently singular to justify its publication. As regards general appearance and all clinical manifestations, few would have hesitated to diagnose the complaint as the ascitic form of tuberculous peritonitis.

A boy, aged 4½ years; when first seen very bright and intelligent; had suffered from no previous illnesses excepting measles. As a baby he had been fed on cow's milk; his five brothers and sisters were all healthy and there was no tuberculosis in the family. The history of the beginning of his present complaint was indefinite. For about four months he had complained of pain in the "stomach" and occasionally vomited after food; there was no diarrhoea. The abdomen during this period had become larger and larger and loss of flesh had been considerable. There was no suggestion of injury.

Condition when First Seen.—The chest, face, and limbs were very emaciated; the abdomen was large and prominent. The heart and lungs appeared quite normal; pulse 90, respirations 28, temperature 98.8°. A large amount of ascitic fluid was present; there was no pain even upon firm pressure. The subcostal circumference was 24¾ in.; the umbilical 21½.

Subsequent Progress.—The condition was diagnosed as tuberculous peritonitis; he was kept in bed and given syrup of iodide of iron; oleate of mercury ointment was rubbed into the abdomen daily. Two days after admission he was tested by von Pirquet's cutaneous reaction. On the right arm bovine tuberculin was used and on the left human tuberculin, with a control underneath each. Both proved positive, the intensity of the two reactions being about equal. The circumference of the abdomen in seven days had increased from 24¾ in. to 25½ in. in the case of the subcostal circumference, and from 21½ in. to 22½ in. in that of the umbilical. Owing to the respiratory embarrassment—the respirations were now 40—five pints of dark brown fluid were removed by laparotomy; no glands were felt inside the abdomen, nor were any tubercles seen. A small piece of the parietal peritoneum, cut out and subsequently examined microscopically, showed no tubercles.

Ten days later the wound had quite healed and the stitches were removed, but there was still a small amount of fluid. During the time he had been under observation the temperature had varied between 97° and 98.8°; at no period had it been higher. At the end of another week the temperature suddenly went up to 100° and a purpuric rash appeared over the chest and arms. A few hours later he became comatose and died the next morning.

The necropsy afforded no evidence of tuberculosis. In the abdomen was a fairly large quantity of fluid and numerous adhesions; the visceral and parietal peritoneum was enormously thickened. The omentum and mesentery were somewhat rolled up, and contained much inspissated pus between and around their layers. Pus of a similar nature was present on other parts of the peritoneum. No enlarged glands were found either in the abdomen, mediastinum, or neck; there was no sign of tuberculous ulceration of the intestine. The heart and lungs were normal, but the stomach wall was very thick. The spleen was soft and not enlarged; the liver indicated chronic congestion; the kidneys, brain, and meninges were normal. With such *post-mortem* revelations it can scarcely be maintained that the *Bacillus tuberculosis* was the organism responsible for the pathological changes, although clearly the condition was due to bacteria of low virulence.

Of the many varieties of chronic peritonitis, the following only need be considered in connexion with this case: (1) Diffuse adhesive peritonitis, (2) chronic proliferative peritonitis, (3) tuberculous, (4) gonorrhoeal, (5) pneumococcal, and (6) idiopathic (so-called) peritonitis.

Although undoubtedly the condition found at the necropsy could be described as diffuse adhesive peritonitis with suppuration, it does not agree with the type to which this name is applied, inasmuch as the latter follows an acute attack. The case differed from one of proliferative peritonitis in that pus and numerous adhesions were present and that the etiological factors were not the same.

The onset and course of the case were certainly more or less typical of chronic tuberculous peritonitis. There was a gradual subacute onset; the temperature varied between normal and subnormal. According to Hutchison, however, the ascitic effusion is rarely large; in this case it was sufficiently great to warrant laparotomy. Further, had the case been tuberculous, one would have found at least some *post-mortem* evidence of tuberculosis. In tuberculous peritonitis the effusion is usually straw-coloured, though occasionally it may be haemorrhagic; in this case it was dark brown. When ascites is present, the peritoneum is almost invariably found to be studded with tubercles.

It has been said that gonorrhoeal peritonitis has been found in males associated with a gonorrhoeal infection. In the case under discussion there is nothing to suggest this.

Pneumococcal peritonitis is more often primary or secondary to some other source of infection than a complication of lobar pneumonia. It is most common in female children, and is very acute: the pus is said to be thin, widely diffused, and with much fibrin. According to Still, primary peritonitis in children beyond the stage of infancy is nearly always tuberculous or pneumococcal. Records of 91 cases of pneumococcal peritonitis in children under 15 years of age, collected by Annand and Bowen, show that the symptoms were always severe, closely resembling, with one exception, the clinical course of diffuse perforative peritonitis. There was the same sudden onset, often with rigors and violent and persistent pain, frequent vomiting, advancing prostration, and early death. In children, however, this condition has been known to give rise to chronic encapsuled abscess, and it is conceivable that the chronic suppuration in this case may have been due to a strain of pneumococci of low toxicity.

Allchin, however, mentions certain forms of peritonitis attended with suppuration which run "a course the duration of which may justify their being designated as chronic." They may continue for many months, the severity of the local condition and the toxic manifestations being insufficient to cause death, though the general health of the sufferer steadily deteriorates. "Such cases," he says, "have been referred to as 'acute progressive fibrino purulent peritonitis.' It is only in the sense of their duration that they are to be regarded as chronic, being rather of the nature of a succession of acute or subacute attacks of localized character." Since this patient's illness did not commence with an acute attack, and during the course of observation showed no rise of temperature indicative of an acute exacerbation, it does not coincide with Allchin's description of acute progressive fibrinopurulent peritonitis.

It appears evident that the end was brought about by a sudden rise in the toxaemia, a fact which also accounts for the purpuric rash. As the evidence in favour of pneumococcal infection is not great, the most one can say is that the case was a somewhat anomalous type of chronic suppurative peritonitis and due to an organism of low virulence, such as *Bacillus coli communis*. Had the clinical appearance not been so typical of tuberculous peritonitis, one would have endeavoured to cultivate the organism from a swab taken at the time of operation. My acknowledgements are due to Dr. T. R. Whipham for his courtesy in permitting me to make use of the case.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

THE TREATMENT OF LAMBLIA INFECTIONS.

I WAS interested to read in the JOURNAL (March 18th, p. 407) of Drs. Woodcock and Penfold's experiences in the treatment of *Lamblia* infections. In a paper I recently published in the *Journal of Tropical Medicine and Hygiene* I laid stress upon the importance of repeated and careful examinations of the stools both before and after treatment, and also mentioned some drugs tried by myself. In the doses in which I used them, emetine, beta-naphthol, and methylene blue all failed, completely to sterilize the patient of his infection. An apparent improvement occurred after the latter two, but prolonged examinations showed that this was only of a temporary nature.

I also described toxic symptoms following the administration of the methylene blue. Since then Major Marshall, of Edinburgh, has drawn my attention to a paper by himself and Gee published long ago in India, in which similar symptoms were met with after the use of this drug for malaria. He believes it is due to the difficulty of getting samples of the drug free from zinc chloride, and recommends giving it with extract of hyoscyamus to prevent bladder symptoms. Of other drugs I have used, bismuth alone, salicylic acid alone, salol, thymol, and cyllin have also proved ineffective.

It is specially interesting, then, to hear of Drs. Woodcock and Penfold's apparent cure of a case by the combined use of beta-naphthol and bismuth salicylate. Before finally concluding, however, that this is a cure, further examinations should be carried out especially after the administration of good saline purges. Though very constant in certain cases, the passage of the cysts in others is equally inconstant, and they apparently may disappear for quite a long time of their own accord. An attack of diarrhoea or a purge often quickly brings them back again.

I recently saw a case heavily infected with *Trichomonas* and proposed treating him with methylene blue, but before doing so I thought I would observe him for a week. The trichomonata disappeared of their own accord, and so far (one month) have not again put in an appearance. If I had given the drug I would naturally have concluded that it had made them disappear. Turpentine, so lauded by French workers, and guaiacol carbonate I note also failed in some of the authors' cases. I am certain that many so-called successes, if followed up for a sufficiently long period (six months to a year), would have to be written off and debited to the failure column. Drs. Woodcock and Penfold's first case approaches the time limit given, though one would like to know how many times "several" really means. Their other cases, examined four and three days after treatment, of course give far too short a time to base any definite conclusions upon.

London, W. GEORGE C. LOW, M.D.

A CASE OF POTASSIUM CHLORATE POISONING IN AN INFANT.

I FOUND a child aged 4½ months in a prostrate condition. There was marked pallor, with cyanosis of ears and lips and of the hands and feet, which were cold; breathing was quickened and shallow, but not jerky or noisy. The child lay still with eyes open, some contraction of the eyebrows, and an occasional peevish cry. The rectal temperature was normal; the pulse, 204, could be felt at the wrist. There was no cough, and nothing was found abnormal in the lungs. There was no vomiting and nothing abnormal about the abdomen. Some castor oil had been given before arrival, and the bowels had acted normally. The appearance suggested profound toxaemia. The diet had consisted of cow's milk, cream, and sugar of milk; the feeds had been prepared with scrupulous care, the mother herself being a medical graduate. Poisoning by gas-stove fumes was excluded, and the cream used was found on inquiry to be free from any preservative, such as boric acid.

It was noticed on the previous day that the feeds had been taken with some reluctance, but nothing abnormal was noticed about the child until the early morning of the day when first seen. When seen three hours later some brown-black material, the size of a small pea, found on the napkin was thought to be probably faecal until some greenish-yellow urine containing particles of similar material was seen issuing from the urethra. It was evident great destruction of the haemoglobin was in progress, and I suspected a chemical poison. Rough tests showed the supposed sugar of milk to be an inflammable salt of potassium, subsequently proved to be potassium chlorate. Death ensued without convulsions.

Post-mortem Examination.—The musculature was of a dusky red colour. The heart and blood vessels contained soft chocolate-coloured clot, and the walls of the aorta showed patches at intervals of brownish discoloration. The liver, spleen, and kidneys were chocolate in colour, with a "burnt sienna" coloured exudate on scraping. The calices of the kidney and the ureters and bladder were filled with a soft, friable brownish-black material which was not blood clot. The bladder also contained some turbid yellowish-brown fluid.

Reading. E. W. SQUIRE, M.B.Lond.

AT a meeting of the American Medical Library Association held at Washington in May, 1915, Mr. James F. Ballard urged that all medical libraries should adopt a uniform method of preparing statistics of their contents, and the following recommendations were made:—Everything of over 100 pages is a volume; everything of any size, if bound, is a volume; everything under 100 pages, if unbound, is a pamphlet. Duplicates should not be counted, except second copies of books in general use. Uncatalogued material and incomplete and unbound periodicals should not be included.

Reports of Societies.

DISCUSSION ON GUNSHOT WOUNDS OF THE SPINE.

AT the meeting of the Medical Society of London on March 20th a discussion on gunshot wounds of the spine was opened.

MEDICAL ASPECTS.

Captain JAMES COLLIER said that the subject could be considered under the following heads: (1) The nature and mechanism of production of the lesions; (2) the state of the reflexes and of muscle tone in the affected region; (3) the distinction between root lesions and central lesions of the cord; (4) disturbances of sensibility; (5) prognostic indications; (6) the occurrence of rare and unusual phenomena.

The Nature of the Lesions.

The lesions had been caused by high-velocity bullets, shrapnel, fragments of shell casing, and by concussion of high explosives without external wound. The lesions might roughly be classified thus:

1. *Direct lesions*, resulting from the passage of a missile across the spinal canal, whether it touched the spinal cord or not.
2. *Indirect lesions:*
   (*a*) Those due to the indriving of bone, etc., into the spinal canal.
   (*b*) Impact lesions in which the missile struck against the bony wall of the spinal canal.
   (*c*) Concussion lesions from the shock of high explosives.
3. *Secondary Lesions.*—Perithecal and intrathecal haemorrhage, medullary haemorrhage and thrombosis, meningitis, oedema. These lesions were important as the cause of the deepening of symptoms, often at a considerable time after the injury.
4. *Remote lesions*, which might be found anywhere in the spinal cord and chiefly near the surface. Such were spots of necrosis, sieve-like rarefaction, punctiform haemorrhages, oedema, and swelling of axons. These lesions were produced by the sudden raising of the intraspinal pressure caused by the passage of the missiles through the intraspinal space or by a general concussion effect. They were well marked in cases of concussion without external wound.

After discussing the mode of production of the direct injury, he said that it seemed to him impossible that a bullet could cross the spinal canal without causing the most severe and irreparable of transverse lesions, and he argued that in all cases in which relative or complete recovery occurred the lesion had been indirect—either an impact lesion or due to the indriving of bone. Probably the bullet was most frequently deflected by the bony wall and seldom traversed the canal. The passage of a high-velocity bullet in the immediate vicinity of the spinal canal or the impact of a projectile upon the bones forming the canal might cause lesions of the cord though the walls themselves remained intact. The damage to the cord produced in this way by indirect injury varied from the most severe with symptoms of a total transverse lesion with no recovery to the slightest with complete recovery.

Concussion Lesions.

Concussion lesions might occur from the bursting of high explosive shells when the back was turned towards the force of the explosion without the production of an external wound, lesion of the bones, or even bruising of the soft tissues. It was possible to conceive that when severe lesions had been caused in this way there had been such distortion of the spinal column as might produce a subluxation of the vertebrae which became immediately reduced, but not before it had severely compressed the cord. There was, however, no evidence of such a subluxation, and the lesions must be regarded as due to impact. In his own cases and in others seen the lesions had been in the lower dorsal region.

Root Lesions.

Sometimes the lesions produced by projectiles affected the spinal roots after they had left the thecal space to a much greater extent than the cord or thecal contents. This seemed to be the case when there was much fracture and crushing of the bone, especially in the region of the transverse processes. There was usually much swelling and oedema in the damaged area. Such root lesions were not entirely due to direct injury; they might result from subperiosteal haemorrhages and periosteal swelling which strangled the roots in the intervertebral foramina, or from pachymeningeal haemorrhage.

Intrathecal Haemorrhage.

Blood effused into a free thecal space found its way into the lower part of the space around the cauda equina and lumbo-sacral enlargement, and, if massive in quantity, might distend that space and cause pressure upon the roots and epiconus, and ultimately completely destroy by pressure and evascularization the cauda equina, and perhaps also the lumbar enlargement. Small effusions might cause local signs of nerve root injury. A severe condition of this kind might resemble a complete lesion of the cauda equina or lumbo-sacral enlargement. Lesser conditions might cause signs difficult of explanation unless the possibility of intrathecal haemorrhage were borne in mind.

Total Necrosis.

Total necrosis of the distal segment of the spinal cord was found in one patient. The signs were those of a complete transverse lesion at the level of the third dorsal segment, and the patient survived for three months. The most plausible explanation for such lesions was a spreading thrombosis throughout the blood vessels of the distal segment.

Reflex Action.

It was usually held that the initial condition of reflex action after the occurrence of severe lesion of the cord was that there was complete loss of both jerks and superficial reflexes, or that, if the loss was not complete, the only sign of reflex action left was a feeble flexor response of the toes; and that the early presence of the extensor response, or its early return, indicated that the lesion was not complete and was of good import. He had seen one case, fatal on the fourth day, with persistent extensor plantar response which negatived this view. There were four consecutive stages in the condition of the plantar reflexes following transverse lesion of the cord: (1) An initial extensor response; (2) either complete absence of reflex or a reduced flexion reflex; (3) extensor response; (4) normal flexion reflex which returned when recovery was complete. He had repeatedly observed these successive changes, and considered that the plantar reflex was an index of the severity of the damage and an important early indication as to recovery. His observations led him to support Lieutenant-Colonel Gordon Holmes's view that the "reduced flexor response" was a unisegmental reflex involving the first sacral segment only. Another important point which had been brought out by recent experiences was that the influence of the higher nervous system upon the reflex action and muscle tone of the cord was strictly homolateral.

Contracture.

Three conditions of contracture of the feet occurred in these paraplegic cases: (1) The dropped foot with retracted toes—pes cavus; (2) the retracted foot with retracted toes—the calcaneus position was often extreme, the ankle-jerk was always lost and the anterior tibial jerk marked, an extensor plantar reflex was always present; (3) the dropped foot with dropped toes, with either absent or reduced flexor response. He considered that the dropped foot with dropped toes indicated a more complete transverse lesion. The calcaneus position was a very remarkable phenomenon, and had always persisted in such cases as he had met with.

Speaking of the ultimate condition of the paralysed region in cases of total transverse lesion, he suggested that "isolation dystrophy" might reach such a point that no signs of activity of the lumbar enlargement remained. To "paralysis in extension" and "paralysis in flexion" he thought might be added a third type—complete flaccid paralysis—from which the other types developed, and to which they returned when there was an increasing lesion or from long-standing isolation of the distal segment.

SURGICAL ASPECTS.

Lieutenant-Colonel DONALD ARMOUR said that the cases met with fell into two main classes: (1) Those in which the function of the cord was not interfered with; (2) those in which there was interference with function with or without damage to the vertebral column. Later effects—such as arose from inflammation, and as adhesions, serous

cysts, blood clot, continual suppuration, etc.—had also to be considered. The most frequent cause of cord injury was a driving in of fragments of bone. The lesions varied from concussion to extensive injury, diffuse and irregular in distribution, with a tendency to diminish gradually from the site of the disturbance. The point of chief importance was whether it was possible to recognize clinically the nature or extent of the damage. *X* rays were most unreliable in this respect. They might fail to reveal a bony injury when it was present, and never showed the full extent of the injury within the spinal canal.

With regard to operative procedure, three questions arose: (1) Would any benefit accrue? (2) Would life be endangered by it? (3) Might the patient be made worse by the operation? In practised hands he did not think that operative treatment should add materially to the risk.

The level of the lesion, as determined by diagnostic methods, did not correspond to the level of the vertebral damage, and therefore a wide area of the cord should be exposed. The dura, if intact, should not be opened if sepsis were present, and drainage should be employed. A contraindication to operation was a septic condition of the kidney or bladder. If the intercostal muscles were paralysed, this undoubtedly added to the danger of the operation, but such danger might be successfully guarded against by a skilled anaesthetist. An operation was indicated to remove pressure by bony fragments, haemorrhage, oedema, secondary thickening, etc. Since there was no sure means of distinguishing between concussion and actual gross damage, he thought that if any doubt existed, the patient should be given the benefit of the chance of relief by surgery.

DISCUSSION.

Dr. LEONARD GUTHRIE, speaking of the prognosis in transverse lesions of the cord, said that in cases of complete transverse lesion certain familiar symptoms arose; similar symptoms resulted merely from spinal shock. Spinal shock could not be excluded within three months of the injury. In certain cases in which an operation had been performed it had been reported that the cord was disintegrated and pulped, and yet return of function followed. Any return of function was an indication that the cord had not been completely destroyed, as was supposed. He referred to a case in which some return of power and of reflexes took place a year and three months after the cord was said to have been destroyed. With spinal shock, first flaccid paralysis, and then paralysis in extension or in flexion might follow. Paralysis in extension was an indication of a lesion less severe than in paralysis in flexion. Flexion which had become permanent was distinct from that occurring with stimulation, and represented a cadaveric position or a return to the fetal condition. Great caution should be exercised in accepting the view that a complete transverse lesion of the cord had existed. He then recorded certain anomalous cases in which the effects of lesions seemed to indicate the existence of separate sensory paths for sensations which are generally considered to take the same course.

Captain E. ADAMS, speaking from experiences at King George and St. Thomas's Hospitals, referred to 14 cases with positive evidence of damage of nerve tissue. In all there were destruction of nerve cells, haemorrhage and concussion. Three ended fatally, 2 from urinary sepsis and 1 from bronchopneumonia; in 3 there had been no improvement, but of 1 it was too early to speak definitely; in 8 substantial progress had been noted. In such cases he thought that bedsores and catheters must account for some fatalities. The former danger had been greatly lessened by more skilled nursing, but he questioned whether it was right to hand over cases of spinal cord damage to male nurses for regular catheterization. The same view seemed to be suggested by those who in France had resorted to suprapubic cystotomy. Relief of pressure on the cord was the chief aim of surgery. In all fatal cases exploration of the cord showed it to have been severely pulped. In those which improved the cord was softened in one. It was a matter for consideration whether the neural arches should be removed in all cases. In the majority he thought that exploration was not only justifiable but indicated. He preferred to wait until two or three weeks after the wounds had healed.

Captain E. FARQUHAR BUZZARD said that he was in almost complete agreement with Colonel Armour and Captain Adams. In all cases in which an operation was done to determine whether there were pressure on the cord it was not wise to rest satisfied with the mere removal of a foreign body without proper laminectomy. Paraplegic symptoms sometimes came on after a considerable interval. He related such a case in which a foreign body had been removed without laminectomy The condition had greatly improved after rest. More rest was required after an injury in the cervical region than after an injury elsewhere in the cord. A troublesome sequel to cord lesions was spasticity. In the treatment of this the education of the patient to enable him to overcome the contracture was important. Electric treatment and massage possibly did more harm than good.

Major NEWTON PITT had found that the results of laminectomy were generally very disappointing; it was therefore very difficult to know when to insist on its performance. In the treatment of the cystitis he had been impressed by the improvement which followed suprapubic cystostomy in two cases. Many anomalies were met with in the reflexes. The imperfect flexor plantar response was very interesting, as also was the variability of the plantar responses. He had seen a spastic condition of the legs with flexor plantar response in some cases and considerable divergences in the great and little toe responses on each side, and in that of the tensor vaginae femoris. The etiology of these variations needed more elucidation. Pyrexia occurred in two cases with marked spasticity and flexion of the limbs when extension was applied and disappeared when this was discontinued.

Dr. S. A. K. WILSON referred particularly to so-called cases of concussion of the cord. One case was that of a youth who was advancing when a shell burst ten yards in front of him but without hitting him. He fell down on to soft ground with sudden abdominal pain, followed by involuntary defaecation and loss of power and sensation below the waist. The symptoms were those of a transverse lesion at the level of the ninth dorsal segment. He had gradually improved. The nature of such conditions was undetermined; possibly they might arise from sudden "evascularization" of the cord. He also recounted a case in which symptoms came on after a considerable interval when the patient was thought to have got well. Three months after the injury the patient had suddenly noticed that he could not feel the coins in his pocket, and loss of sensation was detected in his right arm and leg. The symptoms cleared up after two months' rest.

Lieutenant-Colonel P. SARGENT agreed that when any doubt existed the patient should have the benefit of an exploratory operation; it was not a difficult or dangerous procedure. It would reveal conditions not recognizable by neurological methods or by *x* rays. It was difficult to decide when to operate in the early stages. The question of nursing had to be considered, and again, if the condition seemed almost hopeless, an operation might preclude the possibility of sending the patient home alive to his relatives. All that an operation could do was to relieve pressure, and the earlier that was done the better. In certain cases the spinal cord was swollen, particularly in the cervical region. Many such cases recovered spontaneously and progressed satisfactorily, but it was open to question whether a simple incision into the cord would not assist in recovery and avoid further destruction. The chief difficulty in recent cases was sepsis, which was often a deterrent.

FASTING TREATMENT FOR DIABETES.

AT a meeting of the Hunterian Society on March 8th, when the President, Mr. W. H. KELSON, was in the chair, Dr. W. LANGDON BROWN, in a paper on the treatment of diabetes by fasting, said that three recent methods of investigation had been of great assistance in diabetes: (1) The estimation of the blood sugar, which had shown that, whereas in the large majority of cases of clinical diabetes there was hyperglycaemia, in a few, usually mild, cases the blood sugar was below normal; the blood, however, in many of these latter cases of "renal" glycosuria developed hyperglycaemia later on. (2) The so-called pancreatic-diastase reaction, which had shown that the amount of diastase in the urine was subnormal in nephritis, moderately raised in chronic pancreatitis, and

very greatly increased in acute pancreatitis, with blocking of the ducts. The reaction was of value in diagnosing cases of glycosuria of pancreatic origin. (3) The estimation of the alveolar CO_2 had often proved of use in foretelling the onset of coma. Obvious errors of internal secretion were not often met with, but sugar in the urine might occur in the following conditions:

1. *Pancreatic Insufficiency.*—In this case there would be hunger pain and other symptoms of hyperchlorhydria. Very often fatty diarrhoea, and certainly increased diastase reaction.
2. *Thyroid Over-action.*
3. *Suprarenal Over-action.*—Many of the cases of glycosuria in later life, with raised blood pressure, were probably of this type.
4. *Pituitary Over-action.*

The disease was formerly looked upon as due to a disorder of carbohydrate metabolism; it was now recognized that such facts as the presence of oxybutyric and other acids, and the varying amount of ammonia in the urine, indicated that the metabolism of fats and proteins was implicated as well. In order to standardize results he used the test diet containing 100 grams of carbohydrates and 108 grams of proteins. This was capable of producing 164 grams of carbohydrates, and the proportion of this excreted as glucose gave the "coefficient of excretion" in any particular case. The essential principle of the new treatment was fasting. While fasting, in an ordinary person, would occasion a rise in the diacetic acid, in a diabetic it was followed by a diminution. The method of treatment was a complete fast for forty-eight hours followed by von Noorden's "vegetable egg" diet for forty-eight hours. Protein was then added cautiously during the ensuing days; this formed the "ladder diet" stage. After a fortnight the fast routine might be repeated in suitable cases. The aim was finally to reach a "balanced diet" in which a small proportion of carbohydrates found a place. The usual diabetic diet contained far too much protein, and this excess often predisposed to acidosis. Diabetics were not intolerant of the carbohydrates equally; laevulose was much more readily assimilated than most. As artichokes contained inulin, which on digestion gave rise to laevulose, they might be made the first addition to the diet. Others, readily assimilable, were potatoes, baked apples, milk in small quantities, and even green peas. By making use of the fast routine and the balanced diet far more satisfactory results were obtained than by other dietetic methods.

Reviews.

EXERCISE IN EDUCATION AND MEDICINE.

WE noticed the first edition of Dr. R. T. MCKENZIE'S *Exercise in Education and Medicine*,[1] and we now welcome the appearance of a second edition of a book which is certain to be valued by all who are interested in the subject, either as educationists or as physicians. It contains a historical review of the progress of physical education in many parts of the civilized world, even in such countries as China and Manila and among the North American Indians. In the United States this branch of education has received special attention, and the provision of gymnasiums and playgrounds forms an outstanding feature of municipal work. In the universities which have grown up so abundantly in the various States of the Union during the last generation the need for the physical training of students has been not only recognized but even to some extent over-emphasized, for we are not sure that we agree with the author's statement that this training increases the powers of self-preservation and efficiency and teaches a graceful carriage and "those social and moral qualities which can be cultivated so well in no other way." The athlete may be a ruffian and a bully. Record breaking and the desire to win games by any means should be sternly repressed, as only when his skill is associated with a chivalrous character does the athlete become admirable. An excellent feature of the system followed by American teachers of physical education is the "floor talks," or short addresses of about ten minutes' duration on such subjects as the causes of disease, the carriers of infection, cleanliness, the dangers of dirty uniforms and soiled towels, on diet, exercises, bathing, alcohol, tobacco, and venereal disease. It is hardly possible to over-estimate the good that may be done by a teacher who can deal with subjects such as these in a manner to secure the attention and interest of his hearers.

In his remarks about the athletic education of girls, the author says that though they do not appear to have a natural taste for regular exercises, there has been improvement in this respect in recent years. The exercises followed should not be the same as those for boys, but should be adapted to suit the special character of girls. It is particularly desirable that the co-operative spirit should be encouraged among them by means of "team games," and that there should be plenty of outdoor exercises to promote nervous stability. No comparison in records should be made between men and women; in most exercises women only attain to about two-thirds of the standards reached by men, but in dancing, swimming, skating, and fencing they reach much nearer the male level.

The later part of the book gives a detailed account of the therapeutic use of exercises, and here as elsewhere it is abundantly illustrated by drawings and photographs.

PUBLIC HEALTH.

MR. MATTHEWS, in his book on *Refuse Disposal*,[2] describes the various methods employed in collecting and disposing of the refuse of towns and cities. The subject is pregnant with interest to bodies concerned in maintaining and improving public health. Efficient and economic scavenging demands increasing attention from sanitary authorities, and the full and reliable information contained in this book will undoubtedly be helpful to authorities about to adjust their equipment to existing necessity. The description of removal methods shows the great development which has taken place in the type of vehicle for removal purposes. The immense advantages, from a sanitary point of view, such a removal car as the Fram possesses, as compared with the uncovered dust cart too commonly used at the present time, are apparent. Mr. Matthews, no doubt intentionally, deals briefly with all methods of disposing of organically charged matter, excepting destruction, since he regards it as the only method of disposal which safeguards the public health. The various types of destructor are described and are fully illustrated by photographs and plans. The claims of the smaller type of destructor are of especial interest at present to those in charge of military stations, where the amount of refuse per head of population is considerable, and where speedy and safe disposal is an urgent necessity.

The Colchester Oyster Fishery[3] is an interesting little book devoted to description of an industry which dates from a very early age. The oyster was recognized as a delicacy before the time of the Roman Empire, and its value as an article of invalid dietary is admitted. It is of the greatest importance, therefore, that the cultivation of oysters should be conducted under conditions which ensure that the marketed product is wholesome. Where circumstances are less favourable than those which obtain in the Pyflect oyster beds, risks attendant on sewage contamination may render the product a source of danger. It is the indisputable right of the consumer to be safeguarded against such a menace, and any dealer who markets oysters from sewage-contaminated waters incurs grave responsibilities. Mr. LAVER has demonstrated that the geographical position of the Colchester fisheries is such that contamination under existing conditions is well-nigh impossible, and his book has rendered the industry with which he deals a notable service.

PLAGUE IN ART.

No disease holds so large a place in art and literature as plague, for although there are several which claim a heavier tribute of human lives, plague, by the swiftness

[1] *Exercise in Education and Medicine.* By R. Tait McKenzie, B.A., M.D. Second edition, thoroughly revised. Philadelphia and London: W. B. Saunders Co. 1915. (Roy. 8vo, pp. 585; 469 figures. 18s. net.)

[2] *Refuse Disposal: A Practical Manual for Municipal Engineers, Members of Local Authorities, etc.* By E. R. Matthews, A.M.I.C.E., M.I.M. and C.E., F.R.San.I., F.R.S.Edin. London: C. Griffin and Co., Ltd. 1915. (Post 8vo, pp 173; 99 figures. 6s. net.)

[3] *The Colchester Oyster Fishery.* By H. Laver, F.S.A., Chairman of the Colne Fishery Board. Colchester: Published by the authority of the Colne Fishery Board. 1916. (Cr. 8vo, pp. 92; 41 illustrations. 2s. 6d. net.)

with which it has spread through nations and over continents and the upheavals of the social system which it has caused, has always struck a special terror into the hearts of men. In their fear afflicted communities sought for metaphysical aid, and when the day of deliverance came their gratitude and their wish to propitiate the anger of heaven found expression in the building of temples and churches, in the erection of statues, and in pictures, medals, and votive offerings of various kinds. While artists in different ages have found inspiration in plague, writers of fiction have described its visitations and poets have sung its horrors. Historians who have not thought other infectious diseases or general problems of hygiene worth notice have chronicled epidemics of plague and have discussed their economic, social, moral, and political effects. On the memorials of these visitations found in architecture, sculpture, painting, and literature, Dr. RAYMOND CRAWFURD based the Fitz-Patrick Lectures delivered by him before the Royal College of Physicians of London in 1912. He has since embodied the substance of them, with considerable expansions, in a handsome volume in which he gives a masterly review of the whole subject from the earliest records of pestilence down to the end of the eighteenth century.[4]

Among the earliest votive offerings were representations of the parts affected by the disease, such as the golden images of "emerods" sent back by the Philistines with the Ark of the Covenant which they had carried off from the Israelites and placed in the temple of their own god, Dagon. Ancient Rome was sorely afflicted by pestilence, and in the closing days of the third century before Christ the magistrates sought aid at Epidaurus, the famous shrine of healing. The serpent of Aesculapius was sent and a temple dedicated to the god was built on the Isola Tiberina. In recent excavations many votive offerings have been found on its site. In Christian times representations of saints whose names were for any reason associated with plague figure largely among the adornments of churches. Saint Sebastian was a favourite subject, probably because his was one of the few nude figures allowed to Christian art in Italy, Switzerland, Southern Germany, and South-Eastern France. Statues and pictures of St. Roch, who is usually depicted with a bubo in the left groin, are also very common.

Dr. Crawfurd gives an interesting account of the effects of the Black Death on the literature, art, and architecture of England. Throughout the Middle Ages plague was endemic in central and southern Europe, and dances of death, plague banners, votive and commemorative paintings, and representations of plague scenes bear witness to the deep impression which it made on the minds of men. These epidemics also gave a strong impetus to the production of mystery and miracle plays.

Among the historians of pestilence the first place must be given to Thucydides, but Dr. Crawfurd, from a critical study of his description of the great pestilence of Athens, concludes that the disease was not oriental plague but typhus fever. Of plague the most striking records in literature are found in two works of fiction. In his *Promessi Sposi* Manzoni gave an account of the terrible outbreak at Milan in 1630, which can never be forgotten by any one who has read it, and Daniel Defoe's *Journal of the Plague Year* was accepted by Mead as the authentic record of an eye-witness of the appalling visitation which made London a city of death in 1665. Dr. Crawfurd, however, thinks that Defoe used materials collected by him for a record of the plague of Marseilles in 1720, and transferred the scene to London. Samuel Pepys, from his own observations, painted a truer picture.

Dr. Crawfurd's book is illustrated with excellent photographs of the most famous pictures dealing with pestilence in the churches and galleries of Europe. It is a monument of learning and industry, and is written in a style which makes it worthy to rank among the best contributions to the literature of plague. It is a pity, however, that a work so full of varied matter should have neither index nor table of contents.

[4] *Plague and Pestilence in Literature and Art.* By Raymond Crawfurd, M.A., M.D.Oxon., F.R.C.P. Oxford: The Clarendon Press. 1914. (Roy. 8vo, pp. 250; 31 plates. 12s. 6d. net.)

NOTES ON BOOKS.

MISS A. E. POPE has written a number of books for the instruction of nurses. Her volume of *Anatomy and Physiology for Nurses*[5] deals mainly with elementary physiology. Of this it contains an ambitious and up-to-date summary which, one would think, is bound to give a strange idea of the science to any one not possessing a solid knowledge of its elements. There are numerous diagrammatic illustrations; many of these, adapted from drawings of microscopical preparations, would gain by the addition of figures to show the scale of magnification under which they are reproduced. In Fig. 109 the inferior thyroid veins are wrongly labelled as the "brachio-cephatic vein." Miss Pope's *Quiz Book of Nursing*[6] contains a series of questions and answers designed for the use of nurses who teach and nurses who study under them; it is designed to offer the information essential from the nursing standpoint. It is divided into chapters dealing with the ward, the general and special care of patients, treatment, medicine, diet, disease, and so forth. Special chapters at the end are given to expositions of the duties of visiting nurses, hospital planning, and hospital book-keeping. Much of the book is excellent; but when the author states (p. 384) that a tumbler contains no more than from 6 to 8 fluid ounces, one is tempted to think she has forgotten for a moment that America is the home of the long drink.

Dr. ELIZABETH BUNDY'S *Textbook of Anatomy and Physiology*,[7] now in its third edition, contains the quantum of knowledge thought suitable for the pupils in training schools and other educational establishments. The type and spelling are American; the illustrations have been selected from such standard works as those of Morris, Deaver, and others. Dr. Bundy's book appears to have begun life as an "Anatomy for Nurses," and contains comparatively little physiology. Occasionally it divagates into pathology; thus on page 338 we read that "*Cataract* is a thickening of the lens. . . ."

Dr. N. C. FLETCHER'S *Compendium of Aids to Home Nursing*[8] is an attempt to express the wisdom of the well-trained nurse in the form of memoriae technicae and tabulation, and is based on the author's Polytechnic lectures. It is complete and concise, and should be of service to those who learn best with the help of mnemonic aids.

The Child: His Nature and Nurture,[9] by Dr. W. B. DRUMMOND, covers a good deal of ground that has been touched on by other authors. The history and comparison of the Froebel and Montessori methods of education is of considerable interest, and will be welcomed by many teachers of young children.

There are some good points in *What Every Mother Should Know*,[10] by C. G. KERLEY, but we cannot agree with the author on the proportions of milk advised for infants of from 3 to 10 days old. Three ounces of milk to seventeen ounces of water and lime water is too dilute a food for the average baby, nor do we like the suggestion that the food for twenty-four hours be mixed at one time.

[5] *Textbook of Anatomy and Physiology for Nurses* By A. E. Pope. Second edition. New York and London: G. P. Putnam's Sons. 1915. (Cr. 8vo, pp. 604; 137 figures. 1.75 dols. net.)

[6] *A Quiz Book of Nursing for Teachers and Students.* By A. E. Pope and T. A. Pope. Same publishers. (Cr. 8vo, pp. 499; 5 figures. 1.75 dols. net.)

[7] *Textbook of Anatomy and Physiology for Training Schools and other Educational Institutions.* By Elizabeth R Bundy, M.D. Third edition London: J. and A. Churchill. 1915. (Med. 8vo, pp. 423; 233 figures. 8s. 6d. net.)

[8] *A Compendium of Aids to Home Nursing (Home Nursing Simplified and Tabulated).* By N. Corbet Fletcher, B.A., M.B., B.C.Cantab. London: J. Bale, Sons, and Danielsson, Ltd. 1915. (4½ by 5 in., pp. 103. 6d. net.)

[9] *The Child: His Nature and Nurture.* By W. B. Drummond, M.B., C.M., F.R.C.P.Edin. London and Toronto: J. M. Dent and Sons, Ltd. 1915. (Cr. 8vo, pp. 223; 11 illustrations. 2s. 6d. net.)

[10] *What Every Mother Should Know about her Infants and Young Children.* By C. G. Kerley. New York: P. B. Hoeber. 1915. (Cr. 8vo, pp. 107.)

MEDICINAL AND DIETETIC PREPARATIONS.

Chloramine-T Disinfectant.

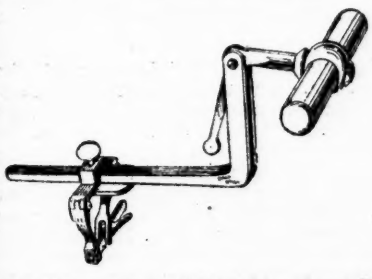
IN the paper on the antiseptic action of hypochlorites, published in the JOURNAL of December 4th, 1915, Dr. H. D. Dakin showed that probably it was conditioned by the formation of chloramines rather than by any decomposition with liberation of oxygen. In another paper, published in the JOURNAL of January 29th, 1916, by Dr. Dakin, Professor Cohen and Dr. Kenyon, it was pointed out that, as it was believed that the antiseptic action of hypochlorites was

due to their capacity for attacking proteins and related bodies, with formation of substances containing chloramine linked to nitrogen, so chloramine appeared to act also, for when brought into contact with proteins such as blood serum it parted with its chlorine, which attached itself to the nitrogen of the second substance. When the hypochlorites act upon free ammonia the simplest chloramine, NH_2Cl, is produced, and by reaction on other bodies other more complicated chloramines are formed. After testing a number of chloramines, they selected para-toluene-sodium-sulphochloramide. This substance has been used with results so satisfactory that a considerable demand has arisen for it, and the substance was put upon the market under another name a short time ago.[1] Boots Pure Drug Company now inform us that they prepare para-toluene-sodium-sulphochloramide, and can supply it under the name "Chloramine-T," suggested by Dakin and his fellow-workers, in powder or in the form of compressed tablets. The powder is fine, white, and flaky, with a faint chlorous odour. It is freely soluble in water, so that it is easy to make a 3 or 4 per cent. solution, which is the strength recommended for wounds. A weaker solution (1 to 2 per cent.) has been highly praised in the treatment of wounds and infections of the mouth and throat, and Mr. A. Edmunds, who had used it at Malta, said during the discussion at the Harveian Society after the reading of Sir Berkeley Moynihan's address on February 24th that as the supply then available to him was small he had reserved it for such cases. Sir Berkeley Moynihan mentioned in his paper published in the JOURNAL of March 4th that chloramine gauze prepared by Dr. Dakin had been used in Leeds and elsewhere in the Northern Command with results which justified the belief that it was the best method so far introduced for checking and controlling the development of infective processes. Messrs. Boots have sent us a sample of gauze, which seems to be very well prepared. The chloramine is entangled in the meshes of the gauze, which in consequence has a rather pungent odour when the package is first opened. With reference to the powder, Messrs. Boots inform us that at the price they are charging a 2 per cent. solution costs 3d. a lb. and a 4 per cent. solution therefore 6d. a lb., as compared with 10d. a lb., the present price of hydrogen peroxide (10 volumes). The germicidal action of Chloramine-T, molecule for molecule, is about four times as great as that of sodium hypochlorite. The prices charged by Messrs. Boots are: For the powder, 1s. an oz.; 4 oz. for 3s. 6d.; 1 lb., 12s. 6d. Bottles of 100 tablets (8.75 grains each), 4s. 6d.; bottles of 12 tablets of 43.7 grains each, 2s. 8d. The price of the gauze, containing approximately 35 per cent. Chloramine-T, is 1s. a roll. The prices in all cases are post free.

MEDICAL AND SURGICAL APPLIANCES.

Axis Tractor Adaptable to any Obstetric Forceps.

DR. R. I. CUMING (West Brompton) has designed a contrivance to obviate the bulkiness, complexity, and expense of a special instrument; it can be fixed on the handle of a forceps of any pattern and applied even when efficient help is not at hand. He has used it, he states, in many difficult cases, and it has never failed him. The instrument consists (1) of a traction handle with a swivel, allowing the head to rotate freely, connected with (2) an indicator, rounded at the free end, which shows the direction of traction. (3) A sliding bar, furnished with a screw and thumb-piece, allows of the instrument being fitted to any forceps and of the direction of traction being adapted to any pelvis. The underside of the sliding bar is fitted with (4) a screw arrangement, which holds the instrument to the forceps and at the same time regulates the amount of pressure on the head. The appliance is made by Messrs. Salt and Son, Birmingham.



[1] BRITISH MEDICAL JOURNAL, February 19th, p. 289.

THE school of massage for blinded soldiers founded in 1915 by Madame A. Léopold-Kahn at the convalescent home at Reuilly has received official sanction.

ELECTROLYTIC HYPOCHLORITE FOR HOSPITAL SHIPS.

A REPORT to the Medical Research Committee[1] on the use of sodium hypochlorite prepared by the electrolysis of sea water for disinfecting and antiseptic purposes on shipboard, especially in hospital ships, has been made by Drs. H. D. Dakin and H. G. Carlisle, and will be read with much interest, because it is important both in its scientific and practical aspects. The report mentions the well-known Hermite process for the sterilization of sewage by electrolytic hypochlorite, introduced about 1893, and the use of electrolytic hypochlorite for general disinfection by several sanitary authorities, notably at Poplar, and the valuable results obtained through its use in the plague epidemic in Glasgow in 1901.

Installation on H.M.H.S. "Aquitania."

The report contains a description of apparatus installed on H.M.H.S. *Aquitania*, and is illustrated by scale drawings which would make it possible for any combination of doctor and engineer to introduce the method into any ship in which its use seems advisable. The electrolyzer consists of a rectangular box of teak or cedar bolted together and divided into twenty or twenty-five cells by means of carbon plates placed parallel to one another. Great care must be taken in the selection of the carbon plates, and a particular kind of graphite is recommended. Two wires leading the ship's current (100 to 110 volts direct current) are suitably connected through a switch with the electrolyzer, which, to ensure even distribution of current, is provided with a copper plate attached to the four binding screws at each end. If alternating current only is available, it must be transformed. If the voltage be 200 to 220, two electrolyzers can be placed in series. Thanks are expressed to Dr. Edward Hopkinson, of Messrs. Mather and Platt of Manchester, for his assistance in constructing a practical and efficient apparatus, and apparently that firm is prepared to provide electrolyzers.

Strength of Solution.

When using ordinary sea water it is inadvisable to continue electrolysis for more than ten minutes. In that time, with a current of 60 to 75 ampères at 110 volts, a solution will be obtained containing usually a little less than 4 parts per 1,000 of sodium hypochlorite or available chlorine. For most purposes it is advantageous to limit the electrolysis to five minutes, and at the end of that time the solution will contain from 2 to 2.7 parts per 1,000 of sodium hypochlorite or available chlorine. For swabbing floors, walls, latrines, etc., this may be diluted with an equal part of water. Comparative experiments upon the bacteriological conditions of floors before treatment, after treatment with salt water, and after treatment with hypochlorite at 1 in 1,000 showed a large reduction by the use of plain sea water, but a huge reduction after the application of the hypochlorite.

Use in Wards.

The results of the free use of hypochlorite in the wards were most gratifying. The general opinion after the experience of two voyages to the Mediterranean was strongly in favour of the hypochlorite as contrasted with phenolic disinfectants. In the typhoid and dysentery wards the results were particularly striking and the absence of odour most marked. In these wards the hypochlorite disinfectant was placed in the bedpans before use. The most important effect, however, had been the large reduction in secondary infection occurring among the ship's staff. While it was not considered that this fortunate result was exclusively due to the hypochlorite, it was generally considered among competent observers that its introduction had been an important cause of the improvement.

Drinking Water.

The hypochlorite had also been used for the purification of the ship's drinking water. About 1 in 1,000,000 was sufficient for all ordinary purposes, and the instability of electrolytic hypochlorite was so great that after three or four hours all traces of chlorine disappeared. On the average about 25 per cent. of the hypochlorite disappeared

[1] *Journal of the Royal Army Medical Corps*, February, 1916.

in twenty-four hours when the solution was stored in shallow tubs, but in covered vats the rate was materially less.

Surgical Use.

Electrolytic hypochlorite for surgical use should not be kept for more than twenty-four to forty-eight hours, but it can be so readily and cheaply prepared that this is not a matter of consequence. As it is free from excess of alkali and reacts faintly acid to phenolphthalein, it was considered that it would be suitable for surgical use, and it was also thought that the presence of the sodium and magnesium salts in the sea water might have a beneficial lymphagogic action similar to that observed in the hypertonic salt solution described by Sir Almroth Wright. It was believed to have been first used for surgical purposes on the French ship *Charles Roux*, and Drs. Dakin and Carlisle were able by the kindness of the P.M.O., Dr. Heitz-Boyer, to spend several days on the ship and to see the solution employed on about 200 purely surgical cases, most of them from Cape Helles, where the wounds were well known to be badly infected. The idea of using the electrolytic hypochlorite on the *Aquitania* was welcomed by Lieutenant-Colonel R. H. Fuhr, D.S.O., R.A.M.C., and it was used in a number of suppurating injuries, many of them originally due to frost-bite. The clinical results were similar to those observed with the hypochlorite prepared from bleaching powder, as originally described by Dr. Dakin in this JOURNAL on August 28th, 1915. A slightly lower concentration was preferred, and for this purpose the sea water, electrolyzed for five minutes, using about 65 to 70 ampères at 110 volts, and therefore containing from 2 to 2.7 parts per 1,000 of sodium hypochlorite, was found a good concentration for general use in surgery.

Laundry.

The solution was also useful in the laundries. In some of the French boats it was used for soaking undyed cotton and linen; it acted as a disinfectant, and had also a marked action in loosening dirt and in bleaching. The solution should be well diluted so as to contain about 0.12 to 0.25 per 1,000 of available chlorine.

Swimming Baths and Harbours.

A similar solution has been used for purifying the water of the swimming baths at Bow and Poplar, and an experiment made in the swimming bath on the *Aquitania* showed that the addition of electrolyzed sea water in the proportion of 1 in 2,000,000 of available chlorine caused a reduction in the number of organisms in two hours from 2,000 to 200 per c.cm. It is suggested that the solution may find an important application in the treatment of the heavily infected salt water frequently found in harbours and ports, particularly those of the Mediterranean, where the tidal purification is slight. Observations were also made as to the effect of the solution on various structural materials.

Effects on Metals, etc.

Clean iron and steel were attacked rapidly by 1 in 1,000; copper more slowly; brass still more slowly; and aluminium, zinc, nickel, and tin scarcely at all under the conditions of the experiments. Lead was the most resistant of all the metals tested. Tin plate, nickel plate, and galvanized iron were not appreciably attacked if the plating was intact. Wood took up a certain amount, but in no case was significant damage done. Wooden tubs containing strong hypochlorite solutions for long periods developed a soft whitish deposit, but if this was not scraped off further action soon ceased. Painted wood and metal proved to be very resistant. None of the floor surfaces in the wards on board ship showed significant damage, but the solution dried rather slowly on damp days on linoleum. Speaking generally, it may be said that no significant damage to ship structures was observed after two months' use.

An Expert Opinion.

In some remarks attached to the report Lieutenant-Colonel Fuhr says that for the purification of drinking water the method was quick, simple, and very easily worked, giving a clear potable water with no appreciable taste or smell if the mixing was thorough. With regard to its use in surgery, he says that he has been much impressed by the results, and by the fact that on changing gauze dressings they readily peel off without pain or bleeding of the granulations. Some considered that the chemically made balanced solution was less irritating, but this, in Colonel Fuhr's opinion, was a matter of dilution and increased frequency of dressing. For sanitary purposes it was the best, cheapest, and most easily applied method available, and as a deodorant it was invaluable. The *Aquitania*, accommodating more than the seven largest London hospitals, had given him full opportunity for forming a considered opinion, particularly as large numbers of dysentery and paratyphoid cases had been carried. The confinement of approximately 4,000 patients in a limited space rendered essential most stringent sanitary precautions, and Colonel Fuhr states that he has staisfied himself that for efficiency, economy, and utility, electrolytic hypochlorite is very essential for hospital ships.

DR. GÓDLEWSKI states in the *Press médicale* (February 3rd) that he has taken blood from sucklings for haemoculture and Wassermann's reaction, and more recently from military patients, without ever missing a vein, never making a *saignée blanche* as Dupuytren would say. Godlewski makes use of the fact that a vein can be displaced laterally, but only to a limited degree. A vein in the bend of the elbow being made prominent, the needle of a hypodermic syringe or any other suitable needle is thrust into the skin on one side of the vein—on the concave side if the vein be somewhat curved. The needle pushes the vein away for from 2 to 5 mm., but then the limit of lateral displacement is attained, and the point will enter without fail. The needle must be passed almost parallel to the surface of the arm obliquely towards the vein and close under the skin, otherwise it is certain to pass behind the vein.

A SYMPOSIUM on leprosy was held on October 27th at a meeting of the Chicago Medical Society (*Journ. Amer. Med. Assoc.*, November 13th, 1915, p. 1753). The disease in North America is limited to a few foci. In 1815 a leprous person from Normandy settled at Tracadie, in New Brunswick, and there has been leprosy in the district ever since. There is a lazarette containing 26 beds, but, as the result of partial segregation and better sanitary conditions, leprosy is rapidly diminishing, and few of the beds are now occupied. Scandinavian immigrants have introduced leprosy into Minnesota, eleven cases being detected in 1900. By 1903 no new cases were reported. Along the Mexican frontier a few cases are now under treatment; the patients seem all to be Mexicans. It is believed that there are about 100 lepers in New York and a few cases in Chicago, but in no instance did the disease arise in either place. Two well-known foci of leprosy in the United States are in Louisiana and Key West, Florida. In Louisiana, where leprosy is active, every effort is made to segregate lepers as completely as possible, public asylums of refuge being now provided for them. No such institutions appear to have been established elsewhere in the States, and the establishment of a national sanatorium for lepers is advocated.

THE *Revue Neurologique* is the official organ of the Paris Société de Neurologie. The number for November-December, 1915, which has recently appeared, is, like that of May–June, 1915, devoted entirely to war neurology. It forms a volume of 436 closely printed pages, containing original contributions on disturbances of vision due to lesions of the intracerebral optic paths and of the cortical visual sphere by Pierre Marie and Charles Chatelin; on nervous disturbances of reflex nature by J. Babinski and J. Froment; on the relation of trembling to emotional states by Gilbert Ballet; and others, besides abstracts of communications made to societies and papers in medical journals—French, English, Russian, and Italian—during the second half of 1915. A special feature is a review of the work of French military services of neurology. Summaries of some Austro-German papers are included. These are said to be "of little importance," but the editors state that they have thought it their duty to place at the service of humanity all scientific productions whatever be their source. The January issue of the Edinburgh *Review of Neurology and Psychiatry* is also devoted to the neurology of the war. It contains a report by Dr. A. Ninian Bruce of a case of disseminated sclerosis following exposure with long periods of remission, and fifty-two pages of abstracts.

British Medical Journal.

SATURDAY, MARCH 25TH, 1916.

WOUNDS OF JAW AND FACE.

ON the outbreak of war those whose daily work made them realize the calls the army and navy would make on the dental profession urged not only that dentists in large numbers would be needed for preventive dental treatment—treatment more especially designed to obviate the many and serious disabilities arising from septic teeth and want of teeth—but also that special attention should be paid to the difficult subject of repair after serious injury of the jaws and face. They remembered the disabilities, ranging from the loss of power to eat anything but soft food accompanying an ununited fracture of the mandible to the awful misery of such cases as that figured in Heath's *Injuries and Diseases of the Jaws*, in which the whole suborbital part of the face had been blown away by a shell. This occurred in the Crimean war and culminated in the suicide of the victim. They knew, too, that the dentist had not been idle in devising means to relieve the miseries of these unfortunates. Civil practice constantly provides a certain number of cases of direct injury, of necrosis, of resection for tumours, in which greater or lesser amounts of bone and soft parts are lost from the jaws and face; and the need had already produced the men to deal with it. Foremost of these was Claude Martin, a dentist of Lyons, who by lifelong study elucidated the main principles of the methods of combating cicatrization and of applying temporary and permanent substitution apparatus, even to the extent of artificially replacing an entire mandible. Further the surgeon had introduced bone grafting, skin grafting, improved methods of plastic operation, and above all, better ways of dealing with sepsis.

What may be called preventive dentistry, which in view of the numbers involved and of its influence on the general health of the soldier and sailor is the more important problem, has received very considerable and constantly increasing attention.

Colonel Lee, in his speech on the Army Estimates last week, said that at every clearing station along the whole front there is a well-qualified dental surgeon, well equipped with appliances. We may add that we understand that the French authorities have accepted the services of a corps of 1,000 dentists.

The dentists employed with the armies probably have plenty to do, and the treatment of wounds of the jaw is only a part of their duties. It is, however, a very important matter, and the need for special hospitals at the bases was early recognized in France; at the end of November, 1915, there were seven special centres—Paris, Lyons, Bordeaux, Marseilles, Montpellier, Bourges, and Clermont. Mr. H. Baldwin, President of the Odontological Section of the Royal Society of Medicine, in introducing the discussion on war injuries of the jaws and face, reported in our issue of March 11th (p. 375), said that in Paris the jaw cases were divided between the dental department of the American ambulance, a wing of the military hospital of the Val-de-Grâce, the dental school and Michelet Hospital, and a private hospital maintained by the Comtesse de Grammont. The total number of beds provided in these four hospitals for jaw cases was about 1,000. The organization at Lyons under the general direction of Dr. A. Pont he described as wonderful. The central institution was installed in a large school building called the hospital for stomatology and bucco-facial prosthesis, and in that and five other hospitals beds were provided for 830 jaw cases. The beds in one hospital were reserved for jaw injuries complicated by wounds of the sinuses and ear, under the care of an experienced oto-rhino-laryngologist, as well as a stomatologist. Another was for jaw injuries complicated by wounds of the eyes, and had an ophthalmological service.

In England a start has been made in the Eastern Command, a special hospital having lately been organized at Norbury, where there are now collected about 130 jaw cases under the care of a specially selected dental surgeon. In one direction at least—the treatment of ununited fractures of the jaws—this specialization has already proved of value. We are sure that the military authorities in this country realize the great possibilities of relief the progress of dental and medical science has made available, and are aware that there is a very considerable number of dental surgeons willing and able to help.

In the same discussion Dr. Hotz, of the Paris centre, and Dr. Hayes, of the dental department of the American ambulance in Paris, said that the ultimate success of the treatment of such cases depends upon the building up and restoration of the jaws as a skeleton or framework upon which the final plastic operation can be made. When such cases came under specialist treatment late, though they might be cured of infection and their wounds healed, faces, he said, were distorted, mastication rendered impossible, and the fractured parts were not only displaced but consolidated, so that for reduction either a radical surgical operation, or long and tedious treatment with some special apparatus had become necessary. The moral that skilled dental intervention at the earliest possible moment is essential was supported by all subsequent speakers. Though it may be possible to make a general classification of jaw injuries, yet a specially made splint or apparatus is necessary for each one of such cases, because the teeth, which are used as *points d'appui* for the splints, are not in any two cases alike, and because when it comes to apparatus of replacement, such as false jaws, each case obviously stands alone. Only a skilled dentist can devise, make, fit, and fix these splints and apparatus. The teeth are very generally the groundwork on which the possibility of splint or permanent replacement apparatus rests. A judicious selection must at the outset be made of the remaining teeth and it may be advisable even to retain roots. Teeth likely to be of permanent value are scaled and perhaps filled; those of no value are extracted to aid in the general clearing up of sepsis. An excellent illustration of the expert use of roots was shown among the cases exhibited at the discussion alluded to. The issue between permanent disability and permanent usefulness of the jaw lay in the preservation of a molar root situated in the hinder fragment of the jaw. In this case the dental surgeon, Mr. W. Hern, was able to preserve the root and bring the case to a triumphant issue.

In those more serious cases in which bone grafting or replacement apparatus are contemplated, the patient should be in the hands of a dental surgeon at the earliest possible moment, while the parts are still accessible for taking impressions and noting the various necessary measurements. When vicious bony

union has taken place, when the original wounds of soft parts or the scars of plastic operations have cicatrized, the time for this work, the very foundation of the whole process, is past. Vicious bony union must now be broken afresh. Cicatrices must be stretched by long and painful effort, sometimes, as Claude Martin noted, extending over a year or more, and the result can never be as good as in cases taken in hand at once.

Special centres, each with a skilled dental surgeon and a general surgeon to undertake bone grafting or any necessary plastic operation, are needed, and it will often be necessary to keep ambulant cases under treatment for long periods, since recovery is often necessarily very protracted. In France this point is considered so important that lately, when in preparation for a large influx of wounded an order was sent out to evacuate all such cases as could walk, jaw cases were excepted unless they could be sent to a hospital similarly equipped.

FASTING TREATMENT FOR DIABETES.

ABOUT two years ago Dr. F. M. Allen of the Rockefeller Institute Hospital in New York introduced a new and apparently valuable method for the treatment of diabetes mellitus in certain of its stages. This has already been described briefly in this JOURNAL,[1] and was the subject of a paper read to the Hunterian Society recently by Dr. Langdon Brown (see p. 452). It consists in fasting or starvation, prolonged for several days together if necessary, followed by a period of very light diet. The treatment has been tried with success at the Massachusetts General Hospital, and an account of the experience gained with it there and details of the very various diets employed in these cases have recently been published by Dr. Hill and Miss Eckman.[2]

An outline of the treatment is as follows: The diabetic patient is kept on ordinary diet for two days after admission, in order that the severity of the disease may be determined. He is then starved, and no food is allowed save whisky and black coffee, one ounce of the former being exhibited every two hours from 7 a.m. to 7 p.m. This furnishes food to the value of about 800 calories, and serves to keep the patient more comfortable while he is being starved; if whisky is thought undesirable, bouillon or any clear soup may be given instead. Water may be taken *ad libitum*. If there is evidence of acidosis (strong acetone or diacetic reactions in the urine) a drachm or two of sodium bicarbonate may be administered every three hours; this, however, is rarely necessary, and there is no danger of producing diabetic coma by the starvation—a most important point brought out by Dr. Allen. The patient should be up and about during the period of starvation and not confined to bed. The starvation is continued until the urine shows no sugar; in the experience of Dr. Hill and Miss Eckman four days is the longest period of starvation that has been found necessary, but they know of obstinate cases that have been starved for as long as ten or eleven days. They say that the patients tolerate fasting remarkably well, and that they have not themselves seen any ill effects from it. The patient should be weighed daily, and a slight loss of weight is to be expected. It is, indeed, to be desired in the case of a fat patient, according to Dr. Allen. It is noted that starvation does not affect the urinary output of diacetic acid and acetone in any definite way; if they were previously absent, the appearance of these bodies in the urine is not necessarily a cause for alarm.

When the urine has become free from sugar, as a result of the starvation, the patient is given at first a very light diet of vegetables, such as French beans, celery, spinach, cabbage, or asparagus, thrice boiled in water in order to remove as much of their digestible carbohydrate as possible, with tea or coffee to drink. It is very important that the diet should be raised and improved very gradually. Both the protein and carbohydrate in the food should be increased very slowly; the authors give full lists of the foodstuffs and diets they employ, and the food values and heat values of all the diets they tabulate. They emphasize the fact that the diabetic patient should be encouraged to keep thin rather than fat, and to do with as little food as will keep him in health. If, for example a patient is doing well on a mixed diet containing 50 grams of protein, 50 of carbohydrate, and 150 of fat, with a heat value of about 1,800 calories, he should be encouraged to be content, and not add to his dietary. They say that it is surprising to see how well most patients do on a diet with a heat value of only 1,500 or 2,000 calories. They note that a semi-starvation day of 150 grams of vegetables once a week, whether the urine contains sugar or no, is of value for the purpose of keeping well within the margin of safety, and of reminding the patient that he is on a strict diet. It is important, too, that the diabetic should take a considerable amount of exercise, as this enables him to utilize his carbohydrate diet better. Full details of the stages whereby the diet is increased are given by Dr. Hill and Miss Eckman, with directions for the cook and plenty of menus for the dietetician to choose from. It is clear that Dr. Allen's treatment has proved most successful in America, and it is much to be desired that it should be given a full trial in this country.

[1] BRITISH MEDICAL JOURNAL, 1915, ii, 611.

[2] *The Starvation Treatment of Diabetes. With a Series of Graduated Diets used at the Massachusetts General Hospital.* By L. W. Hill, M.D., and Rena S. Eckman, with an introduction by R. C. Cabot, D.M. Second edition. Boston: W. M. Leonard. 1916. (Pp. 132. 1.00 dol.)

THE DIRECTION OF THE ARMY MEDICAL SERVICE.

THE Secretary of the War Office issued the following announcement on March 20th: "Surgeon-General W. Babtie, V.C., has been appointed to assist Surgeon-General Sir A. Keogh, Director-General Army Medical Services, especially in the work of supervision of invaliding and all questions connected with the physical fitness of the troops at home. The reports circulated in various newspapers to the effect that Surgeon-General Sir A. Keogh has resigned are quite untrue." On the outbreak of war Sir Alfred Keogh, who had been Director-General of the Army Medical Services from 1904 to 1910, was appointed Chief Commissioner of the British Red Cross Society in Belgium and France. Two months later it was decided to duplicate the office of Director-General of the Army Medical Services, and Sir Alfred Keogh was placed in charge of the office of Director General at home, while Sir Arthur Sloggett became Director-General of the Expeditionary Force. This decision was taken on account of the amount of medical work connected with the Expeditionary Force on the one hand, and the home forces and new recruits on the other. It was a period of great anxiety for the medical services, especially with regard to sanitation and the prevention of epidemic disease, for the standing organizations had to be enormously enlarged, not only in France, but also, and perhaps even more urgently, in this country. Recruits were pouring in, and one of the consequences of our want of preparation for a European war was that no arrangements for their training or housing existed, so that almost everything had to be improvised. Mr. Tennant, in his speeches on the Army Estimates, has paid tributes to

the extraordinary success with which the difficulties were surmounted; and it will always be recognized that the great response which the medical profession at home made to the call for recruits, was due in large part to the confidence felt in the broad outlook which Sir Alfred Keogh took of the situation. Surgeon-General W. Babtie, V.C., graduated M.B.Glasg. in 1880, and entered the Army Medical Service in the following year. He received the C.M.G. for his services as senior medical officer in Crete in 1897-98, and the V.C. for his gallantry at Colenso. He was on the staff of the Natal Army, and was present at all the actions for the relief of Ladysmith, and subsequent operations in Natal and the eastern Transvaal, being promoted lieutenant-colonel and receiving the medal with five clasps. He was Assistant Director-General, 1901–1906, Inspector of Medical Services, 1907–10, and Deputy Director-General A.M.S., 1910–14. He was then appointed Director of Medical Services of the Army in India. Last year he became Principal Director of Medical Services, Mediterranean Expeditionary Force, Egypt and Malta.

THE CALCUTTA SCHOOL OF TROPICAL MEDICINE.

ANOTHER long step towards the realization of the scheme for establishing a great school of tropical medicine in Calcutta is recorded in our columns this week. Two years ago the Governor of Bengal laid the foundation stone of the laboratories; on February 26th last he laid the foundation stone of a hospital which will form an integral and essential part of the school, and those who attended the ceremony were able to inspect the laboratories. This is rather good going, though Sir Leonard Rogers seemed disposed to grumble because the pace had not been better. His original plan was for six professors in the tropical school, and it now seems probable that the ambition will be realized. Three professors were sanctioned by the Government, and afterwards a professor in pharmacology was sanctioned, as it was felt that the pharmacology of Indian drugs had been properly included in the scope originally assigned to the school; further, the imperial serologist, Colonel Sutherland, I.M.S., to whose pioneer work some reference was made in an article on blood stains published in the JOURNAL of February 19th, was given permission to lecture, and finally there appears to be good reason for hoping that the Rockefeller foundation will endow a separate professorship in protozoology, so that that subject may be separated from medical entomology. Commercial associations in India have undertaken to make annual contributions for five years, and endowments for three research workers have been provided, in addition to a special scholarship founded by Mrs. Mitra in memory of her husband, who was first medical officer and afterwards home minister for Cashmere. The Indian research fund, through the good offices of the Surgeon-General, Sir Pardey Lukis, has provided a lakh of rupees for the equipment of the laboratories, and the scheme has now been taken a step further towards completion by the realization of the plan for the erection of a special hospital, most of the money to defray the cost of which has been collected. The credit for all this is undoubtedly primarily due to Sir Leonard Rogers, Professor of Pathology in the Calcutta Medical College, who not only conceived the scheme but has known how to enlist the support of the Government and to appeal to the generosity of the public.

THE INFLUENCE OF SEX ON DISEASE AND MORTALITY.

THE fact that sex *qua* sex creates a predisposition to certain diseases is of course a commonplace, but we do not perhaps recognize at how early an age this physiological influence of sex makes itself felt. As soon as the fetal heart can be heard it is found to beat more rapidly in the female than in the male, though the difference is too small to enable the sex to be foretold, being in point of fact less than the difference observed between individuals of the same sex. At birth, boys on the average weigh four or five ounces more than girls. It has been suggested that the determination of sex may be dependent upon nutritional conditions affecting the mother, but in so far as this hypothesis assumes an abundant food supply to be favourable to the birth of males it is not supported by statistics. It is even asserted, though not, we believe, on any sound statistical evidence, that there is a marked excess of male births in poverty-stricken countries and those ravaged by war and famine. We referred in the JOURNAL of January 15th, p. 105, to some interesting investigations by Dr. R. J. Ewart bearing on the subject, and cannot pursue it further now. It seems clear, however, that the superiority in weight and size of male infants at birth is not due to better conditions of nutrition. At birth there are morphological differences, slight it is true, but still quite recognizable; for instance, the antero-posterior diameter of the abdomen is distinctly greater in male than in female infants, while the anterior superior iliac spines are more prominent, and the ischia more widely separated in girls than in boys, and so on. After birth these differences become more and more pronounced, so much so that even before puberty the boy and the girl have devoloped into two very distinct organisms, differing morphologically, functionally, and psychologically—differing, indeed, even pathologically. Those who advocate co-education do not seem to have considered this aspect of the question. A parallel education is conceivable, and even desirable, but the differences between the sexes is too great for any uniform system to be applicable. Boys and girls do not spontaneously play the same games. Girls are more precocious than boys, and their individuality asserts itself earlier. It is therefore not surprising that the two sexes should, from childhood onwards, display different pathological predispositions. The first indication of a distinct pathological predisposition is shown by the greater mortality among male infants, so much so that even though more males are born, by the end of the first year of life females may predominate. Tetany is said to be more frequent in boys and convulsions in girls, and the latter display an overwhelming liability to suffer from chorea. It may be argued that the larger size of male infants at birth renders them more liable to obstetrical traumatism, but this would only account for the excess of male mortality during the first few days of existence, whereas the excess persists throughout early childhood. The difference cannot be due to any lack of care affecting the male infant; on the contrary, in most countries the birth of a boy is the source of special congratulation. No influence can be invoked to explain this excess of male deaths except a less resistance to disease, a proclivity that operates in all latitudes. Taking the coefficient of mortality among female infants as 100, that of boys has varied from 123 in England and 121 in France to 110 in Serbia and Japan. This proportion holds good even in countries with a high all round infantile mortality, and the ratio is much the same during the age period 0–5 years. In the age period 5–15 the rates for the two sexes are almost identical, but after 20 years of age the mortality among females again falls in spite of the risks entailed by pelvic affections, pregnancy, and labour. Speaking generally, it may perhaps be said that the boy reacts more violently to disease than the girl, is more easily knocked over than the latter, does not recuperate as quickly when the illness takes a favourable turn, and does not offer as much resistance when suffering from chronic affections.

VENOUS THROMBOSIS IN MYOCARDIAL FAILURE.

IN a monograph of the new series of the Johns Hopkins Hospital *Reports*, Drs. Sladen and Winternitz have collected from the literature of the last sixty years 48 cases of venous thrombosis occurring usually as a terminal

event in patients with heart failure. They add a case observed by themselves, and give an account of 15 more cases, 14 of them seen during recent years at the Baltimore hospital from which they write. The condition, they say, is one that has not met with the recognition its frequency and severity deserve. The patients were of all ages, and 46 of the total of 65 were females. The mortality of the thrombosis was 83 per cent., 36 of the patients dying within a month. Mitral stenosis had been thought the commonest cardiac lesion leading to the heart failure and thrombosis; but the authors found mitral stenosis either alone or in combination in 24 of the patients, mitral reflux in 35. The thrombosis occurs most often in the veins of the upper extremity, the left and right sides being about equally often affected. The iliac or femoral veins were involved in only 7 of the 65 patients. As for the signs and symptoms produced by the thrombosis, oedema was by far the commonest and not infrequently the only manifestation. Local pain and tenderness over the veins and palpable cords in the course of the vessels were the next most frequent indication; cyanosis and local coldness, evidences of a collateral circulation, loss of the jugular pulse, unilateral exophthalmos, and torticollis were among other signs noted. Three cases were not recognized clinically, general oedema being a marked feature in all three. Pulmonary embolism with the formation of an infarct was the most serious complication; no patient who recovered had shown signs of this.

THE PRICE OF DRUGS.

WE publish elsewhere a letter from a correspondent on the subject of the high prices at present prevailing for many drugs; probably the increase of 50 per cent. in the cost of drugs for a year therein referred to is by no means an unusual experience. It will be remembered that at an earlier period of the war a circular was sent to the medical profession drawing attention to the shortage of existing supplies of many drugs, and recommending economy in their use; a failure of the usual sources of supply naturally means an enhanced price for such quantities as are available, while other causes—such as increased cost of transport and increased consumption—also play a part in raising prices. Several of the drugs showing the greatest increase in cost—such as salicylates, aspirin, bromides, phenacetin, potassium permanganate, atropine, and cocaine—were before the war either obtained entirely from Germany or were produced here from raw materials, such as bromine, coming principally from that country; others—like morphine and quinine—have always been made here, and their rise in price would appear to be due chiefly to the large demands of the army. Our correspondent suggests that the Association should endeavour directly, and indirectly through the Government, to induce manufacturing firms to produce drugs hitherto obtained from Germany. There is good reason for saying that the present high prices would seem to offer a sufficient inducement to manufacturers; if they have not taken up the production of the drugs in question on a large scale it must be because difficulties exist which are not easily disposed of. The increased demand for drugs due to the huge requirements of the army, and of chemicals of a great variety of kinds required directly or indirectly in modern warfare, has resulted in chemical and pharmaceutical manufacturers being extremely busy in executing orders, and this at a time when large numbers of their male employees have joined the army. These considerations have in many cases precluded the possibility of taking up new manufactures, which inevitably require a fair amount of experimental work; a further difficulty is that, owing to the vast amount of army work in the hands of engineering firms, it is a very difficult matter to get new plant constructed, while the congested state of railway transport makes its delivery when made a very slow matter. Nevertheless, in spite of all these and other difficulties, manufacturers in this country are producing considerable quantities of some of the drugs formerly sent here by Germany, and there is good ground for believing that most of the manufactures so established will continue here after peace has been declared.

UNWARRANTABLE CRITICISMS.

MR. MCNEILL'S attack upon the arrangements for collecting and treating the wounded after some of the big actions in which the British army has been engaged in France seems to have aroused a good deal of indignation in the Expeditionary Force. Colonel Arthur Lee's statements in his speech reported at page 461, founded upon personal experience while occupying an official position which enabled him to watch the evacuation of the wounded, may be received with all the more confidence because of Mr. Chamberlain's frank admissions as to defective arrangements in Mesopotamia. In a private letter we have seen, from a writer in a good position to judge, the allegations of which Mr. McNeill made himself the mouthpiece are described as tragic nonsense. "I have been round the front recently," the writer says, "and do not know how any great changes for the better can be made. Mr. McNeill does not understand the situation, nor can he or anyone imagine it who has not been there. The base hospitals," the writer continues, "within a fortnight after Loos were practically normal again, except for the retention of some of the worst cases which it was thought inadvisable to move. This is a great tribute to the administration, and there was little or no delay anywhere." One base alone got "8,000 cases within a very few days, and among them there were in that fortnight only 60 deaths"; although a large proportion of the casualties notified were, of course, only slight wounds, they filled up the hospitals temporarily. "There are," the letter continues, "grousers who complain that they have no work suitable to their high qualifications, but these are just the people who do not do the work waiting for them. Thank God the majority of the profession is playing the game! . . . Take Mr. McNeill's remarks about stretchers. Field ambulances were grabbing stretchers indiscriminately; orders were given to disgorge to a proper distributing centre, and at the same time to obtain an extra supply. If more were wanted, a chit for the supply of fifty stretchers, for example, would bring them back with the car or cars which went to fetch them. So, you see, there is truth in what Mr. McNeill says! There was, however, no complaint of want of stretchers."

THE Royal Medical Benevolent Fund Guild, which works in co-operation with the Royal Medical Benevolent Fund to assist, by personal service, the families of medical men who, owing to the death or incapacity of the breadwinner, are reduced to poverty, is always glad to receive gifts of clothes, including secondhand boots and shoes in good condition, and household linen. As was shown by the report of the annual meeting of the Fund, published in the JOURNAL of February 26th, the Guild is now called upon as a result of the war to deal with many widows and children who in happier times would not have dreamt of asking for assistance. We are informed that the cupboards at the clothing dépôt, 43, Bolsover Street, W., are very bare, and that clothes suitable for boys and girls working in offices, for women and for old men, are much wanted. They should be sent to the secretary of the Guild at the address mentioned.

IT has been suggested that benevolent societies be formed for the benefit of the families of officers and other ranks of the medical services auxiliary to the Regular Royal Army Medical Corps—namely, the Special Reserve, the Territorial Force, and new army. Funds

would be raised by voluntary subscriptions, and it has been proposed that each branch of the service should appoint a committee of five to seven members to administer its own funds. A meeting, presided over by the Director-General, will be held in the Lecture Theatre of the Royal Army Medical College, Grosvenor Road, S.W., on Wednesday, May 10th, at 3 p.m., and it is hoped that as many officers as possible will attend. In the meantime any inquiries may be referred to Lieutenant-Colonel G. St. C. Thom, R.A.M.C., War Office, S.W.

IT is satisfactory to note that among the Shakespeare tercentenary celebrations tributes of honour from the medical profession to the memory of our greatest poet will not be wanting. Sir StClair Thomson has chosen "Shakespeare and Medicine" as the subject of his oration to the Medical Society of London on May 1st. This date has been fixed for the oration so that it may take its place in the programme of official celebrations. Another homage from the profession will be paid by Mr. Alban Doran, who has written the article on Shakespeare's medicine in *Shakespeare's England*, a volume designed on lines laid down by Sir Walter Raleigh and Sir Sidney Lee which is to be issued from the Clarendon Press.

Medical Notes in Parliament.

A Year of War.

(Continued from p. 430.)

ARMY MEDICAL ORGANIZATION.

ARMY MEDICAL SERVICES IN FRANCE.

Colonel Arthur Lee's Reply to Mr. McNeill.

IN the course of the debate on March 16th Colonel Arthur Lee (formerly R.A., and British Military Attaché with the United States army during the Spanish-American war, and now parliamentary secretary to the Ministry of Munitions) began his reply to Mr. McNeill, complaining that he had disfigured his speech by very bitter personal attacks upon distinguished officers of the Army Medical Service who were not in a position to defend themselves in public. His reason for speaking was not, Colonel Lee said, his present office, but the fact that for nine months he had been Lord Kitchener's special personal representative to report to him upon the practical working of the medical services in the field, especially with regard to the collection, care, and evacuation of the wounded at the front. He had, he admitted, no special qualification for the work, except the fact that as a soldier he had some knowledge of the practical difficulties which distinguished war conditions from those of peace. The distinction was often forgotten by critics, who, animated no doubt by the most disinterested motives, were apt—he was referring to professional critics, whether they came from Glasgow or Portland Place—not to realize the difficulties with which the medical services were confronted, and had been led in many instances to be grossly unfair to their colleagues oversea. He had had unique opportunities of watching the daily and nightly work of the medical services at the battle of the Aisne, at both battles of Ypres, at Neuve Chapelle, at Festubert, and at other places that had been mentioned. In the harrowing tale Mr. McNeill had told he failed to recognize anything which in the faintest degree corresponded to the facts as he saw them. Mr. McNeill had already shown himself over-credulous in regard to other matters—witness his discovery of two million impending war babies, reduced after investigation to two false alarms and one case of twins. He had again shown this defect in this instance. If there was, Colonel Lee continued, any official at the War Office universally recognized as a success in view of his great talents, his alert and far-seeing mind, his wisdom, patience, and urbanity in dealing with innumerable complaints and representations, it was Sir Alfred Keogh. He was entitled to the highest praise, and it was true that there had been no specially bitter attack upon him. There had, however, been a very bitter and vicious attack upon Sir Arthur Sloggett and Surgeon-General Macpherson. Mr. McNeill had complained that Sir Arthur Sloggett did not combine the organizing skill of Napoleon with the scientific genius of Lister and Paget. These were rare qualifications, and when a man possessing them was found Colonel Lee would, he said, be the first to support his being placed at the head of the medical services. Whether the distinguished informants who supplied Mr. McNeill with the material for his attack believed that they possessed these high qualifications or not he did not know, but he had met in this country surgeons who had not made the sacrifices these officers had made, who had given him the impression that they probably held a higher view of their qualifications than was generally held by their profession at large. Sir Arthur Sloggett had great qualities for the position of head of the medical services in the field—great experience, extraordinary tact, and great powers of dealing with the difficult personal situations bound to arise, such as that which arose at the beginning of the campaign between the Royal Army Medical Corps and the Red Cross. He was very accessible to suggestions, and was responsible for establishing in the field, that Advisory Council of eminent civilian surgeons who met periodically and gave the medical services the benefit of their advice.

Festubert, Ypres.

With regard to the attack on Surgeon-General Macpherson, on the ground that there had been a terrible breakdown in the medical arrangements at the battle of Festubert, Colonel Lee said that he had been specially commissioned to watch the medical arrangements throughout that battle, and there was no breakdown. The evacuation of the wounded proceeded without a hitch, in spite of the fact that an enormous number of wounded had to go through one clearing station. There was no criticism at the time, no complaint by officers or by men, and he thought that Mr. McNeill had been very misinformed. It was not true that Surgeon-General Macpherson had been removed from the first army to another on account of the breakdown, nor that he had subsequently been removed to Salonika. Surgeon-General Macpherson was selected to go to Salonika on account of his high qualifications.

With regard to the general criticisms of the organization of the medical services, Colonel Lee said that he thought it would be a fatal mistake to deprive the divisional medical arrangements of their mobility. One of the chief anxieties of the heads of the medical service had been lest the sedentary character of the war at the moment should deprive the medical service of its flexibility, power of rapid movement, and of adapting itself to new conditions, all of which were necessities in the event of the army advancing. As to Mr. McNeill's statements about the first and second battles of Ypres, Colonel Lee said that they bore no relation whatever to the facts. It was not a mistake to establish a clearing station at Poperinghe; it was the only town within easy reach of Ypres where there was any building of sufficient size. It was not under fire, and was suitable in every way except that there was only the one broad, good, smooth road. If Mr. McNeill had known anything about the conditions of war he would not have suggested that the wounded should be diverted to the other clearing stations at Haasbruck and Bailleul. Had he known the state of the side roads in Flanders he would never have suggested that the wounded should be subjected to the atrocious agony of being carried over them, even in the best motor ambulances. As a matter of fact the wounded were not evacuated from Ypres by motor ambulances but by trains. He could speak confidently on the subject, for he had seen practically every wounded man evacuated and taken out of the area. On October 31st, 1914, 1,600 wounded men were evacuated in the course of the night without any hitch of any sort, an achievement which reflected the greatest credit upon the Army Medical Service. As to Hooge, where it was said that doctors worked forty or fifty hours at a stretch, whilst medical staffs of other divisions were waiting at Ypres with nothing to do because their troops were not engaged, the suggestion was perfectly ludicrous to any one who knew how hard pressed we were. There was not one single unit not engaged in the battle, and every man—cooks, typewriters, and non-combatants—was put into the firing line. As to the eighty men Mr. McNeill alleged had been forgotten, a good deal could be

said, but it was sufficient to say that they were not British. As to the charges that men were left lying out, Colonel Lee said that the collection of the wounded and their evacuation had been carried out with dispatch and regularity never before known in war. He challenged Mr. McNeill to produce evidence to satisfy any reasonable man that there had been anything approaching a breakdown in any of these great battles. Colonel Lee added that in the course of his duties he had interrogated thousands of officers and men at every stage from the front to the base hospitals, but so far from hearing complaints, he heard one long story of gratitude and praise of the way in which they had been treated by the medical services. Two services had in general been outside the fire of criticism—the commissariat and the Army Medical Service.

"Movable Hospitals": Clearing Stations.

As to the argument that the fact that the men arrived home with septic wounds was proof of neglect, the truth was that every wound was septic from the moment it was inflicted. Colonel Lee expressed his inability to understand what Mr. McNeill meant by field hospitals at the front. [Mr. McNeill interposed to say that he had only repeated what he had been told.] As to Mr. McNeill's suggestion that the wounded should be attended by a system of movable hospitals with easy access by motor car, Colonel Lee said that if by hospitals were meant buildings or marquees, with operating rooms, surgeons, nurses, anaesthetics, and everything necessary for operating under modern conditions, then they existed already as close to the firing line as was compatible with not being under shell fire. That was an important point; it was not a question of whether a surgeon and his assistants were afraid, or not afraid, but whether it was physically and mentally possible to conduct operations in a hospital into which a high-explosive shell was liable to be dropped. The experiment had been made, and in some instances hospitals had been pushed up towards the zone of shell fire, with deplorable results to the patients and staff. If the suggestion meant some new form of movable hospital pushed up in close proximity to the firing line, then in the first place the military authorities would not allow it, because it would hamper them; and in the second, it would instantly be spotted by enemy aeroplanes and become the constant mark of artillery fire. Again, what was to be done with the wounded man after he was operated upon in a movable hospital? A movable hospital was meant to move, but after an abdominal operation a man must be kept quiet for a week. The only possible advantage would be that a man could be operated on a few minutes—at the outside half an hour—sooner than he would have been at a clearing station.

Abdominal Operations and Compound Fractures.

It was not the case that opportunities for doing abdominal surgery had never been instituted; they had existed during the whole time he (Colonel Lee) was at the front, and in standing orders issued to the medical service on March 27th, 1915, there was reference to the conditions under which abdominal operations should be conducted, not merely in the clearing stations, but, if necessary, in the field ambulances. The abdominal operations had been singularly successful and there had been a very large proportion of recoveries. The same statement applied to compound fractures. Mr. McNeill had really once more succeeded in discovering what Lord Morley, when he was a member of the House of Commons, used to describe as a *nidus equinus*.

Dentistry.

It was not true that dentistry was neglected; at every station along the whole front there was a well qualified dental surgeon, well equipped with appliances.

Nidus Equinus.

Mr. McNeill had called for an investigation—a few competent and disinterested, not necessarily technical, investigators to be sent out to corroborate the horrors he had described. He wanted the tree pulled up by the roots to see how it was growing. Colonel Lee concluded by saying that he was under no obligation to the War Office, and that to serve Lord Kitchener for nine months sometimes brought more kicks than ha'pence. He had felt impelled by a sense of common justice and decency to make a vigorous protest against Mr. McNeill's unjustifiable, violent, ill-informed and baseless attack upon a body of as highly skilled, devoted, and gallant men as ever served the State. They deserved not censure, not carping criticism, not personal libels, but the whole-hearted gratitude of the whole community.

Sir John Spear said that it was comforting to hear of the great devotion of the medical men, and the great care taken of wounded soldiers, but Mr. Hodge complained that the accusation that a large numbers of stretchers gathered together before the battle of Loos had been dispersed because the number was in excess of regulations had not been answered. Mr. Hodge also complained that the War Office was doing nothing for nurses who had been broken in the war. They got twenty-six weeks' sickness benefit from an approved society, and after that an invalidity pension of 5s. a week, but nothing from the War Office.

MR. TENNANT'S REPLY.

Mr. Tennant, in a general reply, touched first upon this point. The devotion and self-sacrificing services rendered by the nurses throughout the war were appreciated, and he would take care to see that proper action was taken, but he suspected that Mr. Hodge was referring to members of Voluntary Aid Detachments and not to nurses permanently attached to the army. With regard to the Army Medical Advisory Board, Mr. Tennant said that Sir Alfred Keogh's attention at the outbreak of war was particularly directed to sanitation, which was more important than anything else, for everyone knew that the expectation was that more would die of disease than of wounds. That had been so in nearly every great war, and this war was very unusual in that respect. The responsibility for the sanitation in France had been placed upon an advisory board, to which Dr. Hill was added as a physiologist to deal with poisonous gases. The work done by this body against the gas attacks had been quite extraordinary. He believed that Mr. McNeill now admitted that the work done by the army medical authorities had been admirable, but, Mr. Tennant continued, he regretted very much and would resent on behalf of his medical advisers any false impression such as the speech of Mr. McNeill would have created had it not been for the speech of Colonel Lee. Mr. McNeill interposed to say that he had not spoken from his own knowledge, and had said nothing which he had not been told by people who had seen as much as Colonel Lee, and were in many respects more qualified to judge. Mr. Tennant said that that was a matter of opinion, but he was amazed to hear such a statement, because every soldier he had met from the front, and all persons who came from the front, said that the medical services had really left nothing to be desired. It had been wonderful, and Sir J. Walton exclaimed: "The best there ever was in the world."

MESOPOTAMIA.

On March 22nd Colonel Yate called attention to the operations in Mesopotamia, and criticized the arrangements. The Secretary of State for India, in his reply, said that the campaign began as a comparatively small operation within the resources of the Indian Government. It had grown until it had exceeded those resources, and he was heartily glad that the ultimate control was now exercised by the Imperial general staff at home, acting through the Government of India, the military authorities there, and the general officer commanding on the spot. That transfer had already proved itself advantageous. Mr. Chamberlain went on to say that he had to admit that there had been a lamentable breakdown of the hospital arrangements. He did not seek to palliate some of the things which he had learnt had taken place, but it should be remembered that the campaign had been carried on in circumstances of very great difficulty. According to his latest information—though he was not in a position absolutely to vouch for its accuracy—there had been an abundance of hospital supplies of all kinds at Basra at all times. He thought that there had been a great, and he was inclined to believe inexcusable, shortage of necessary medical appliances above Basra. That was due in large part to the enormous difficulty of river traffic. There had been a shortage of transport; only particular types of river craft, with a very shallow draft, were suitable for the purpose. Recourse was had to Egypt and other countries, but there had been misfortunes in regard

to some of the transports, which had been destroyed or lost by perils of the sea *en route*. But though the shortage of river transport accounted for a good deal, it did not account for all, and neither the Government at home nor the Government of India were satisfied with the state of things which had prevailed. As Mr. Long had stated, General Bingley and Sir William Vincent had been instructed to proceed to Mesopotamia and investigate the medical arrangements there. The inquiry would not interfere with the urgent work now to be done, but it was necessary that the Government should be informed as to the facts and in a position to weigh and apportion responsibility. The commissioners had begun their inquiry in Bombay, where they had seen officers invalided from the front, and they had sent home questions they desired to be addressed to certain officers invalided home. They had now gone on to Mesopotamia, and he hoped that the steps taken had already worked an improvement, and would prevent a repetition of those occurrences of which complaint had been made. General Aylmer had reported that he was extremely satisfied with the arrangements made for the wounded in the field after the recent action. A large number had already been sent down stream, and the rest were following. Mr. Hobhouse expressed the hope that the responsibility would be brought home to those who had allowed men to perish, while serving the country, for want of care and foresight. Mr. Chamberlain intervened to say that while it was his feeling and belief that there had been inexcusable deficiencies in the arrangements for the treatment of the wounded, he hoped the House would keep an open mind until the information was completed. He was profoundly dissatisfied with the information which had reached him, but he did not know the truth, could not depend upon private letters, and did not wish to be held to have uttered any judgement on anybody. Mr. Hobhouse agreed that to judge now a case of this gravity would be unfair both to those who were making the inquiry and to those who were the subject of it.

Unfit Men.—In the discussion of the Army Estimates Major Astor gave several instances of the enlistment of medically unfit men. Such men were useless in the army, were unfit for the mildest form of home defence, were costing the country much money in allowances, and were prevented from doing useful work as civilians. The War Office should get rid of these men at once, so that they might find occupation. He said also that many men were spending months in hospitals undergoing treatment before they were discharged, but nothing was being done to assist them in the way of getting employment and acquiring skill which would be of use to them after their discharge. The true policy was to let every man realize that when he left the army he could serve the State by increasing the production of the country. Mr. Anderson alleged that some doctors were making the test too low, and accepting men who were of no value from a military point of view. Mr. Long, in his reply, admitted that there was an accumulation of men at home who were unfit for foreign service. He said that the Committee over which he presided had the matter under investigation, and that it was also engaging the attention of the Field Marshal Commanding-in-Chief the Home Forces and the Adjutant-General. Returns had been prepared showing that the men unfit were at once put under orders for discharge so that they might be useful in industries. On March 21st Mr. Tennant said, in reply to a question, that a man voluntarily attested, who, on being called up in his group, was not found fit for any service by the medical board was not accepted.

Spectacled Soldiers.—In an answer to Sir Henry Craik, on March 16th, Mr. Tennant stated it was not the case that men were rejected on account of defective distant vision which could be corrected by glasses. It was true that a considerable number of men who had glasses were now serving in the army. The British standard of vision for general service was not regarded as abnormally high. It was fixed by a joint committee of military officers and ophthalmic experts.

Venereal Diseases.—In reply to Colonel Lockwood, on March 21st, Mr. Tennant said that in Egypt during the last eight weeks the percentage of admissions for venereal diseases had averaged 0.09 per cent. per week, which he understood was equal to an average annual admission ratio of 46.8 per 1,000. No figures had been received for Salonika.

Cerebro-spinal Meningitis.—In reply to Mr. Chancellor, on March 16th, Mr. Tennant said that fifteen soldiers were now segregated at the Fulham Military Hospital as carriers of cerebro-spinal fever infection. Two soldiers segregated as carriers had developed the disease in acute form. The Army Council were advised that these carriers should be segregated, not because they had actually communicated the disease to other persons, but in order to prevent them from doing so.

Pensions.—Mr. Tennant has informed Mr. Watt that pensions are granted to the widows of soldiers killed by accident while in the performance of military duty. In reply to Mr. Watt, the Financial Secretary to the War Office said that in the case of soldiers who, having done long spells of service in the trenches, lost their mental balance or were suffering from severe mental strain, while there was ground for hope that a permanent cure would be effected in a reasonable time, the men were not discharged, but given light duty at home. When discharge was necessary from the causes mentioned a pension was awarded.

Tuberculosis.—In reply to Major Astor, on March 16th, Mr. Tennant said that the only men discharged from the army not eligible for sanatorium benefit under the National Insurance Act were those who refused to become insured on entering the army. The number was unknown.

Nervous Shock.—In reply to Sir John Jardine, on March 21st, the Financial Secretary to the War Office said that the War Office was directly and wholly responsible for the care and treatment of uncertifiable soldiers invalided through nerve shock. Any payments made to the asylum authorities or Board of Control in this connexion were made to them as agents of the local military authorities. Mr. Tennant stated that cases requiring special but not prolonged treatment were transferred to one of the Territorial Force general hospitals or to other appropriate hospitals. Severe cases requiring prolonged treatment were transferred to the British Red Cross Hospital at Maghull or the Springfield War Hospital at Wandsworth.

Pay of Medical Officers at Asylums.—In reply to Mr. King, on March 15th, the Home Secretary said that medical officers of asylums adapted as war hospitals, who had been granted temporary commissions in the Royal Army Medical Corps, received in most cases the pay of their rank and not their asylum salary. In those instances in which the pay of their rank was less than their asylum salary, they were paid at the higher rate, and this would continue as long as the institution remained a war hospital. In one or two cases, where the circumstances were exceptional, special arrangements had been made.

Dope Poisoning.—In reply to Mr. Rowlands, on March 21st, Mr. Brace said that the obstacle to the use of the non-poisonous dope in aircraft factories was that one of the essential ingredients was not produced commercially in this country at present. The departments concerned were making every effort to arrange for an increased supply, and new instructions embodying further administrative measures for guarding against the danger had been issued by the Home Office to all aircraft factories. Steps were being taken to extend the use by contractors of a dope made under War Office supervision, which contains as little tetrachlorethane as possible.

THE National Council for Combating Venereal Diseases proposes to organize a number of conferences and courses of lectures, and to issue a summary of the principal conclusions of the Report of the Royal Commission. An appeal for financial support has been issued, and is signed, among others, by the President of the Council, Lord Sydenham, who was Chairman of the Royal Commission; Sir Thomas Barlow, Chairman of the Executive Committee; the Presidents of the Royal College of Physicians, the Royal College of Surgeons, and the Central Midwives Board, Sir Rickman Godlee, Sir Malcolm Morris, Dr. F. W. Mott, and Mrs. Scharlieb, M.D.

AT the monthly meeting of the Committee of the Medical Sickness and Accident Society on March 17th the accounts presented showed a margin in favour of the society in the sickness expectation—a rather unusual event at this time of the year. With so many members serving in all parts of the world with the R.A.M.C., it is impossible to regard the experience as normal, and all calculations are set out of gear and upset. The new business was better than for the preceding month, and the amount of sickness benefit insured by each member has risen. The fees of locumtenents are higher, and this is reflected in the sum necessary to cover this expenditure. The Combined Sickness Benefit and Endowment Assurance Scheme, although limited in its amount, appears to be popular owing to the rate at which it is offered to the profession, and the committee feels that its decision to reopen the life assurance branch on sound lines has been justified. The contract for sickness benefit holds good until age 65, and at that age the annuity scheme, which will be submitted for approval at the annual meeting, will, it is believed, prove a useful and valuable benefit in place of the sickness benefit. For full prospectus apply to the Secretary, Medical Sickness and Accident Society, 300, High Holborn, W.C.

THE WAR.

CHEMICAL WORK.

(From a Correspondent in Northern France.)

IN many of the arrangements of the Army Medical Service in France there is an air of permanency a little depressing from one point of view, but highly satisfactory from another. On the one hand it suggests that the authorities foresee a much longer stay in France than any one can care to believe possible; on the other hand, it induces a conviction that so far as the environment can contribute to the success of medical work, whether prophylactic or curative, nothing feasible is or will be left undone.

At least half a dozen mental images occur in this connexion, but the particular institution which happens to have evoked the thought is one of the hygiene laboratories. There are several of these doing chemical work with the field armies in the guise of mobile laboratories, but that now in mind is a stationary laboratory which forms part of the outfit of the sanitary officer of the principal hospital and evacuation base.

The rooms occupied are part of a building used in peace times as a dried fish warehouse, but they have been so completely transformed as to make it difficult to realize the fact. The main room, besides being well lighted, is very large, and the whole place is thoroughly well equipped. It is possible, therefore, to undertake all the work that commonly falls to the lot of the chemical department of a well-organized public health laboratory at home, and also a certain amount of research work should opportunity for its performance occur.

The routine work of the laboratory consists in helping to safeguard the health of the troops by examining water supplies and testing for impurities the thousand and one forms of preserved and other foods issued by the Army Service Corps for use in the camps and hospitals.

Thus it comes about that there is generally to be seen on the shelves an array of samples awaiting their turn for examination, and seemingly always the same, but in reality daily changing. To specify them would take too long; it must suffice to say that they range from tinned mushrooms to bully beef, and from paraffin oil to powders sovereign against lice.

The routine work done at the mobile hygiene laboratories is of the same general order, but a good deal of their time is often taken up by a form of sanitary police work—namely, keeping an eye on the way in which the men told off to chlorinate water carry out their instructions. The supervision is exercised not by actually watching the men at work but by taking specimens of water served out as ready for use and testing it in various ways to see whether the work has been intelligently as well as conscientiously performed. At none of the laboratories does the officer in charge work single-handed. Sometimes there are two, sometimes three, collaborators.

In common with the workers in bacteriological laboratories, most O.C.'s of hygiene laboratories try to keep going some side line in the nature of original research. Any expert chemist at work in France and versed in the physiological as well as other aspects of his profession is bound to perceive problems whose solution would be of direct benefit to the army, and opportunities for tackling these are gladly seized if the amount of routine work on hand leaves any time available.

As instances may be quoted an endeavour made at the laboratory more specifically mentioned in this note to establish a means of identifying genuine cases of shock—not the shock consequent on exposure, severe injury, or the performance of a prolonged operation, but the peculiar condition to which Laurent, in the first Balkan war, applied the old term "commotio cerebri," and known out here as "shell shock."

In many instances of supposed shell shock the diagnosis may, no doubt, seem luminously clear, but in others there is plenty of room for difference of opinion. Moreover, whatever may be the view taken of the difficulties these cases present, it could not fail to be advantageous to have at command some datum which being both material and positive would be as independent both of patient and observer as a thermometer reading.

The central conception is to use the sugar contents of the blood in the confirmatory diagnosis of these cases, the reasoning in general outline being much as follows: It is well recognized that one of the sequences of any grave disturbance of the central nervous system may be loss of control by the latter over the formation or retention of sugar, and when evidence of such loss is sought it is to the urine that the clinician turns. But sugar in very minute quantities is a normal constituent of urine, and all the tests for its presence in abnormal amount are of a very coarse kind. Consequently no one who uses urine analysis as a means of throwing light on the condition of the central nervous system can feel that he has obtained any assured guidance from his work. Loss of sugar control may exist, but the tests used may have failed to reveal it.

But this does not mean that sugar observations are necessarily useless. Any sugar found in urine must be derived from the blood, and if the sugar contents of the latter could be shown to be altered, such alteration would be better evidence of loss of control than could be any testimony derived from the urine. This would be true even if the tests applied were in both cases equally delicate and precise, for the examination is made at a stage nearer the *causa causans*—that is, the condition of the nervous system—and the evidence obtained would therefore be more direct.

Consequently the aim of the research has been to determine whether there is any method of sugar separation and titration so delicate as to be capable of determining with precision the variation of the sugar contents of the blood above or below the nominal physiological limits, and yet sufficiently simple to be used with the rapidity and frequency required when the final aim of the process is clinical.

The answer so far obtained seems to be in the affirmative, the process employed being a modification of the method of Bang. The distinctive feature of this method is the titration of very minute quantities of cuprous oxide by means of iodine. In the modification the much more delicate reaction of titanium trichloride with ferric chloride and thiocyanide is employed. In both processes the amount of blood required is as little as two drops. Full details of the modification will, it is understood, be made generally available by the publication of a paper thereon at an early date.

A second investigation now in progress at the same laboratory relates to the extreme breathlessness noted in early cases of trench nephritis. It is not known whether this is due to acidosis or some other cause. In the attempts to determine this point made in England the tests have been applied at a date too late for the results to be in any wise conclusive.

GERMAN EXPERIENCES.

NEURASTHENIA AMONG SOLDIERS.

AT a meeting of the Berliner medizinische Gesellschaft last November Dr. Stadelmann, attached to a reserve military hospital, said that 50 per cent. of the invalid soldiers under his care suffered from neurasthenia, and this accounted for as many medical casualties as all the other complaints—such as rheumatism, pulmonary catarrh, etc.—put together; 50 to 70 per cent. of these neurasthenic patients complained of symptoms referred to the heart, but only about 5 per cent. suffered from real heart disease. Most of these patients, particularly the middle-aged, did not wish to recover, dreading a return to the front. Radical measures were necessary in order that the army should not be deprived of the services of this large body of men; they should not be sent home, but should be kept in convalescent quarters behind the front. This plan was already adopted on the western front. Dr. Albu gave an account of his many failures earlier in the war in such cases. At first he kept his patients in bed, often for many weeks; he seldom found them any the better, and even when tachycardia was diminished by rest in bed it usually returned as soon as the patients began to move about again. He had given up this treatment and drug treatment also, having found that even bromine preparations were quite useless. Far better results were obtained when the patients were made to walk and were given light work, and when everything was done to distract their attention from their symptoms. A third speaker, Dr. von

Hansemann, whose experience was gained in a convalescent institution, also emphasized the importance of treating these cases as psychic rather than as organic. He gave his patients plenty of freedom to walk about, so that they might learn to rely on themselves again. The influence of parents, wife, and children was, he said, most detrimental.

TREATMENT OF TYPHOID FEVER AND DYSENTERY.

Dr. F. Meyer praised digitalis in the treatment of typhoid fever. In every case, whether there was an immediate need for cardiac stimulants or not, digitalis was given as a routine measure, and since this treatment had been adopted systematically there had been a great reduction in the frequency of cardiac complications. The administration of killed and sensitized bacilli had never in his experience provoked a further rise of temperature; in many cases the fever fell rapidly. Inoculation late in the course of the disease averted relapses. In very severe cases he had given injections of 20 to 30 c.cm. of blood taken from persons whose fever had ceased and whose acquired immunity to typhoid was raised. He had never seen ill effects from this treatment, which often brought the fever down rapidly. In dysentery he had learnt to rely principally on castor oil and polyvalent serum. Liberal doses of castor oil were most efficacious. He had never seen any disaster follow the administration of serum, but he had sometimes found it inert. This was because he did not at first always use a polyvalent serum, and as his material included cases infected with the Shiga-Kruse bacillus, as well as with the Y bacillus, it was clear that only a polyvalent serum would meet the needs of every case. Among his severe cases the mortality was only 3 per cent., and among severe and light cases together it was only 1.2 per cent.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Killed in Action.

SURGEON-PROBATIONER JAMES JOHNSTON, R.N.V.R., was reported as killed in a list of naval casualties published on March 13th. He ranked from July 28th, 1915. His death took place on February 29th, at the age of 20; it is not stated where. He was the fourth son of the late Thomas Johnston, farmer, of Withcote, Oakham.

ARMY.

Killed in Action.

Third-class Assistant Surgeon Alexis Renwick Emmett, of the Indian Subordinate Medical Department, was reported, in the casualty list published on March 17th, as killed in action in East Africa. He was born on November 13th, 1884, entered the Bengal army, and attained warrant rank on February 27th, 1905, being promoted to the third class on February 27th, 1910. He had previously served in the north-west frontier of India, in 1908, in the operations in the Zakka Khel country and in the Mohmand country, receiving the frontier medal with a clasp. Before the war he was in civil employ in the Central Provinces. He was attached to the second battalion of the Loyal North Lancashire Regiment.

Lieutenant John Wilson, R.A.M.C., was notified as killed in France in the casualty list published on March 18th. He was the son of the late Adam Wilson, of Armadale, was educated at Edinburgh University, where he took the M.B. and Ch.B. in 1909, and was in practice at Hamilton till he took a temporary commission in May, 1915. He was attached to the 10th battalion of the Duke of Wellington's Regiment, the old 33rd Foot.

Accidentally Killed on Service.

Lieutenant Gavin Neil Murphy was killed by a fall from his horse in France, on March 12th, aged 42. He was the youngest son of the late Hugh Gavin, of Stirling, was educated at Stirling High School and in the school of the Royal College of Surgeons, Edinburgh, and took the Scottish triple qualification in 1901, also the F.R.C.S.Edin. in 1903. He then joined the Irish Presbyterian mission hospital at Anand, in the Bombay Presidency, and had only recently taken a temporary commission in the R.A.M.C. He married Miss Maud Muriel Stevenson, M.B.Edin., daughter of the late Dr. Fleming Stevenson of Dublin, who was serving as a lady doctor in the same mission hospital, and leaves a widow and four children.

Died on Service.

Captain William Gem, South African Medical Corps, was reported, in the casualty list published on March 14th, as having died while serving with the South African Expeditionary Force. Neither date nor place were stated. There are expeditionary forces from South Africa now serving in Egypt and in East Africa certainly, perhaps also in France. He was educated in Dublin and took the diplomas of L.R.C.P.I. and L.R.C.S.I. in 1881. Before the war he was medical officer of health of Krugersdorp, in the Transvaal. He was medical officer of the 10th South African Infantry (Witwatersrand Rifles).

Captain Percy Brewster Ridge, R.A.M.C.(T.F.), of the 4th London General Hospital, died at Denmark Hill, London, of pneumonia, on March 12th, aged 33. He was educated at Queen's College, Cork, where he was senior exhibitioner, and graduated as B.A.O., M.B., and B.Ch. of the Royal University, Ireland, in 1906. After serving as senior house-surgeon of the Prince of Wales General Hospital and Cancer Hospital, and as pathologist to the Royal Hospital for Diseases of the Chest and to the City of London Hospital for Diseases of the Chest, he became assistant pathologist and curator of the museum of King's College Hospital and lecturer on morbid anatomy to the hospital medical school. He had only recently joined the 4th London General Hospital as a captain.

Lieutenant Percy Haycraft Berry, R.A.M.C., was reported, in the casualty list published on March 17th, as having died in Egypt. He was educated at Cambridge and at Guy's Hospital, took the M.R.C.S. and L.R.C.P.Lond. in 1913, was in practice at Watford, and joined the army as a temporary lieutenant in May, 1915.

Captain Arthur Ryland Chavasse, R.A.M.C., died of pneumonia at No. 2 General Hospital, British Expeditionary Force, in France, on March 12th, aged 28. He was the only son of the late Sir Thomas Chavasse, of the Linthurst Hill, Barnt Green, Worcestershire; was educated at Oxford, Dublin, and St. Thomas's Hospital, and graduated as B.A.Oxon. with honours in physiology in 1908, and as M.A., M.B., and B.Ch. in 1911, also taking the M.R.C.S. and L.R.C.P.Lond. in the same year. He had acted as clinical assistant in the children's medical department, as house-physician, as casualty officer, and as senior obstetric house-physician at St. Thomas's, and as resident medical officer of Queen Charlotte's Hospital. He took a temporary commission as lieutenant in the R.A.M.C. on February 15th, 1915, and was promoted to captain on completion of a year's service.

Wounded.

Captain J. E. M. Boyd, R.A.M.C., Mesopotamia.
Captain J. H. Fletcher, R.A.M.C. (temporary), France.
Captain H. P. Hart, R.A.M.C., Mesopotamia.
Captain H. K. Rowntree, I.M.S., Mesopotamia.

Missing, believed a Prisoner of War.

Captain R. T. Vivian, R.A.M.C., Mesopotamia.

DEATHS AMONG SONS OF MEDICAL MEN.

Cemery, Percival Conrad, Acting Quartermaster-Sergeant, 14th Battalion, Hants Regiment, fourth son of Lieutenant J. B. Cemery, R.A.M.C., of Aston Villa, Brockenhurst, and late of Alton, killed in Mesopotamia on January 21st, aged 26.

Edwards, Harrington Douty, Lieutenant-Commander R.N., son of Lieutenant C. R. Edwards, R.A.M.C., lost at sea about March 11th. He entered the navy as a cadet in 1902, and became lieutenant-commander in October, 1914. He was decorated with the D.S.O. in August, 1915.

Farrar, Valentine Anstruther, Second Lieutenant 17th Battalion Lancashire Fusiliers, second son of Dr. Reginald Farrar, of the Local Government Board, now a major in the R.A.M.C., died on March 17th, in France, of wounds of the head received on March 15th. He was educated at Harrow and at Magdalen College, Oxford, where he was an exhibitioner. At the beginning of the war he enlisted in the Public Schools Battalion of the Royal Fusiliers, got a commission on September 9th, 1915, and left for France in January, 1916. He was a grandson of Dean Farrar.

Giffard, Colin Hay, Captain 1st Battalion, King George's Own First Gurkha Rifles, son of Douglas Giffard, M.R.C.S., of Merlindale, St. Winifred's Road, Bournemouth, killed in Mesopotamia on March 8th, aged 32. He was born on December 11th, 1883, served in the embodied militia from October 6th, 1900, to July 16th, 1901, and entered the army as a second lieutenant in the South Wales Borderers on December 4th, 1901. He joined

the Indian Army as lieutenant on June 20th, 1903, was posted to the 1st Gurkhas on March 6th, 1904, and became captain on December 4th, 1910.

Hackman, Cedric Craven, 13th Battalion (Kensingtons) County of London Regiment, killed somewhere in France on or since May 9th, 1915, was the son of Dr. L. K. H. Hackman, honorary secretary of the Portsmouth Division of the British Medical Association.

Johnson, Bernard Angus, Private 5th, Weald of Kent, Battalion of the Buffs, East Kent Regiment, elder son of George Lindsay Johnson, M.D., F.R.C.S., of 24, Wetherhall Gardens, Hampstead, killed in Mesopotamia on January 21st, aged 30.

Landale, James Russell, Captain 2nd Queen's Own Rajput Light Infantry, son of the late Deputy Surgeon-General James Landale, R.A.M.C. (retired), of Cheltenham, killed in Mesopotamia on March 8th, aged 34. He was born on December 6th, 1881, entered the Royal Scots Fusiliers as second lieutenant on January 8th, 1901, entered the Indian army, and was posted to the 2nd Q.O.R.L.I. on September 30th, 1905, and became captain on January 8th, 1910. He served in the South African war, in the operations in the Transvaal from May, 1901, to May, 1902, and received the Queen's medal with five clasps. His father died from an accident at Cheltenham on the same day that he was killed (see p. 470).

Langdon, Laurence, Lieutenant 14th Battalion Hampshire Regiment, attached 2nd Battalion Middlesex Regiment, second son of the late Thomas Charles Langdon, F.R.C.S., of Winchester, and of Broughton, Hants, died of wounds, in France, on March 14th, aged 41. His first commission was dated March 31st, 1915.

NOTES.

DR. DUNDAS GRANT is acting as surgeon in charge of the ear, nose and throat department of the New Zealand Military Hospital, Walton-on-Thames.

HONOURS.

The *London Gazette* of March 15th notifies the bestowal of a number of honours for service in the various expeditionary forces: Ten D.S.O.s, 78 Military Crosses, and 181 Distinguished Conduct Medals. Among the latter were three men of the R.A.M.C.: Sergeant W. E. Holdsworth, 1/2nd West Riding Field Ambulance; Private G. H. Needham, and Corporal W. Oliver, both of the 1/3rd West Riding Field Ambulance.

The King has bestowed the order of the Royal Red Cross on the following nurses, in consideration of their valuable services and devotion to duty on the occasion of the loss of the hospital ship *Anglia* on November 17th:—*First Class:* Mrs. M. S. Mitchell, Acting Matron, Queen Alexandra's Imperial Nursing Service (Retired List). *Second Class:* Miss A. Meldrum, Sister, and Miss E. A. Walton, Staff Nurse, Q.A.I.M.N.S.(Reserve).

Midshipman Charles Douglas Horsfall Herbert-Dixon, R.N., who was commended for action and who has been awarded the D.S.C. for services at Gallipoli, is the only son of Major Herbert-Dixon, O.C. 3/5th London Field Ambulance, and at his time of action was only 15½ years old.

MEDICAL OFFICERS WANTED.

2/1st South Midland Mounted Brigade.

Three medical officers are wanted to complete Brigade at present on East Coast. Applications to Major D. M. Spring, S.M.O., R.A.M.C.(T.), Head Quarters, Hempton, Fakenham, Norfolk.

India.

THE SCHOOL OF TROPICAL MEDICINE, CALCUTTA.

AN important step forward in the provision of a complete school of tropical medicine in Calcutta was taken on February 24th, when Lord Carmichael, Governor of Bengal, laid the foundation stone of the hospital for tropical diseases. It stands immediately to the south of the laboratories described and illustrated in the JOURNAL of March 7th, 1914. The chemical laboratory and the medical college adjoin, and the new eye hospital to be erected by the Government of Bengal will occupy a site facing the tropical hospital. The hospital when complete will consist of a basement and three floors. The ground floor will provide thirty-eight beds for Indian male patients. On the first floor there will be smaller wards of nine beds each for European males and Indian females, and of six beds each for European females and children respectively. There will also be twelve small single rooms for private patients and a theatre for clinical teaching and the few operations likely to be required. The second floor will be used temporarily for nurses' quarters until sufficient accommodation is available at the medical college hospital. Quarters are also provided on the top floor of the central block for a resident medical officer and a sister-in-charge, and in the turrets for two Indian house-physicians. At first the hospital will contain eighty beds, but eventually thirty-six other beds can be provided on the third floor. Bathrooms, lavatories, pantries, and reading rooms are provided for each wing on both floors. In the north wing on the first floor there will be admission rooms, a clinical microscopical room, and a room for the sister. The funds for the erection of the hospital have been provided by public subscription. The laboratories and the hospital when complete will form a fine group of buildings on the new central avenue of Calcutta, which is being constructed by the improvement trust. The advantage of having the school, laboratories, and the hospital close together is too obvious to be insisted upon.

At the ceremony the Governor was received by the Surgeon-General of Bengal, Colonel Edwards, who said that the foundation and rapid progress of the school was due to the untiring energy of Sir Leonard Rogers. The first research scholarship in India would be attached to it, and would commemorate Dr. A. Mitra, who was a student first of the Calcutta Medical College and then in Edinburgh; he became chief medical officer at Cashmere, and finally home minister of that state. The scholarship had been founded by his widow.

Sir Leonard Rogers related the course of events which had led to the selection of the present site for the school and hospital. It had at first been proposed to appoint six professors, but this had to be cut down to four. Afterwards, however, the permission to lecture was given to Colonel Sutherland, I.M.S., imperial serologist. It was, however, felt to be unfortunate that a single professor should teach both protozoology and entomology, and as honorary secretary of the endowment fund he had made an appeal to the Rockefeller International Health Commission of New York. Dr. Victor G. Heiser, a member of the Commission and head of the sanitary service of the Philippine Islands, visited Calcutta, and after inspecting the new laboratories and seeing the great opportunities for research in the Calcutta hospitals, supported a request that the Rockefeller Commission should vote £1,500 a year to endow a separate professorship in protozoology. After the war, therefore, it would, he hoped, be possible to open the school with six professors, and he believed that medical men would be attracted not only from India, but from beyond its borders to the Calcutta School of Tropical Medicine. The response to the appeal for endowments by the jute, tea, and mining associations would warrant the appointment of three research workers, in addition to the scholarship founded by Mrs. Mitra. The hospital for tropical diseases was a necessary complement of the school. Though the subscription list was yet insufficient, he was able to look forward with hope now that the building had actually been commenced.

Lord Carmichael, after whom the hospital is to be named, then laid the stone, and in a short address recalled that it was exactly two years since he had laid the foundation stone of the laboratories. Hopes then expressed by Sir Leonard Rogers had since been fulfilled beyond expectation, in spite of unforeseen difficulties of great magnitude. Afterwards the company present inspected the laboratories of the tropical school.

Sydney.

[*FROM OUR SPECIAL CORRESPONDENT.*]

THE PROFESSION AND THE DEPARTMENT OF PUBLIC INSTRUCTION.

THE medical inspection of school children has been actively carried on by departmental medical officers for some years, and good work has been done in this direction. Now, however, the Government has decided to go a step further and to undertake the work of treating all the school children who have any physical defects. For this purpose they have advertised for the services of additional medical officers and specialists. This is regarded as the thin end of the wedge towards a complete system of nationalization of medical services, and a special meeting of the New South Wales Branch of the British Medical

Association was held on January 14th to consider the matter. At that meeting the following resolution was passed unanimously:

That the Association is strongly opposed to any of its members accepting any of the appointments as medical officers, ophthalmic surgeon, ear, nose, and throat surgeon, physician, under the Department of Public Instruction now being advertised, unless the Government gives sufficient guarantees that the treatment of the school children will be confined to those whose parents are unable to afford to pay for medical attendance of the kind indicated, and that the rights of private medical practitioners will be preserved; and that, the Minister having written to the effect that it is the intention not to make any discrimination on the ground of the financial circumstances of the children, the appointments be declared inimical to the interests of the profession.

This resolution has been sent to all the members of the Branch, and it has aroused the ire of the Minister of Education. He stated that he did not believe that the great bulk of the medical men would endorse this arbitrary action.

. . . The principal weapon used by the British Medical Association when in conflict with the lodges and friendly societies of this State was the refusal of its members to meet in consultation any medical man who accepted a contract with the friendly societies. This meant the absolute isolation and ostracism of the practitioner. I propose in this instance to meet any such action by inviting my colleagues to permit me to bring in a bill enacting that any licensed medical practitioner refusing to meet another qualified licensed medical practitioner in consultation without good cause shown shall have his own registration cancelled.

The Minister's bark is worse than his bite, and it is hoped that a satisfactory settlement of the question will be effected.

National Association for the Prevention and Cure of Consumption.

The annual general meeting of this association was held on January 27th under the presidency of Sir Philip Sydney Jones. The report referred to the material reduction in the staff of the association owing to the war, and to the heavy responsibility which had fallen on the dispensary nurse. There were 368 new patients admitted to the dispensary during the twelve months, and 174 old patients continued their attendances. The number of attendances was 9,708, and the actual number of patients under treatment on December 31st, 1915, was 186. Ninety-four patients were sent to the sanatoriums during the year, and the patients visited in their homes by the nurse was 386. Sir Philip Sydney Jones was re-elected president, and Dr. F. S. W. Zlotkowski vice-president.

England and Wales.

Liverpool Medical Institution.

A special meeting was held on March 16th, in the afternoon, with the object of presenting the congratulations of the members of the Liverpool Medical Institution to Mr. Edgar A. Browne and Dr. George C. Walker on their attaining the jubilee of their membership of the institution. There was a good attendance and ladies were invited to be present at the ceremony, which was preceded by a formal welcome by the President and the two members to be honoured. Tea was provided during half an hour's conversazione, and many old friends were present on this memorable occasion. The President, Dr. Charles J. Macalister, occupied the chair, and after letters of regret from the Lord Mayor and others expressing their unavoidable absence had been read, introduced the following resolution:

The members of the Liverpool Medical Institution tender to Mr. Edgar A. Browne and Dr. George C. Walker their hearty congratulations upon their completion of fifty years of membership of the society.

Mr. Edgar A. Browne, as surgeon to the Eye and Ear Infirmary and lecturer in ophthalmology in the University of Liverpool, has been in the foremost rank of those who have advanced the science of his speciality.

Dr. George C. Walker, as physician to the Bootle Borough Hospital, has conferred invaluable benefits upon the sick and suffering among his fellow-townsmen.

Both alike have shown unwearied devotion to clinical work. Dr. Walker has served the institution as vice-president, and Mr. Edgar A. Browne as member of council, secretary to the ordinary meetings, vice-president, and president, and the members desire to place on record their gratitude to and pride in these veteran members of the profession.

They express the hope that these gentlemen may each have many years of happiness with the gratification of being able to look back upon a life's work which has been continuous, effective, and appreciated both by their patients and in the counsels of the profession.

The President lightly touched upon the village of Bootle, at that time a seaside place for Liverpool townspeople, who used to bathe there. It was in such a village Dr. George C. Walker settled down as a general practitioner. Now Bootle was a town with mayor and council, and the shore had long since been converted into spacious docks. With the growth of Bootle a hospital was soon found to be a necessity, and Dr. George C. Walker became attached as honorary physician, which post he held for many years, and was now consulting physician. Later he devoted his skill to mental diseases, and resided in Southport for some time, and was still engaged in active practice there. Speaking of Mr. Edgar A. Browne, the President dwelt upon his wit and humour—ever sources of pleasure to all who heard him. His position in Liverpool as an eye specialist was so well known that it was unnecessary for him to elaborate this point.

Dr. T. R. Glynn, Professor of Medicine, in supporting the resolution, was reminiscent of the days of his youth and that of Mr. Edgar A. Browne, and of the many repartees in which Mr. Browne indulged on various occasions. Dr. Glynn bore testimony to his friend's kindness of heart, his critical acumen, and his excellent method of rendering his discourses, even on eye diseases, not only instructive, but highly entertaining, spiced as they were with quips and anecdote.

Dr. R. Caton, Emeritus Professor of Physiology in the University of Liverpool, spoke of the literary ability of Mr. Edgar A. Browne, and of the artistic gifts inherited from his father, "Phiz," who illustrated many of Charles Dickens's works; both in literature and art Mr. Browne was one of the foremost men in the city. His criticism of art in the widest sense was highly valued, and his opinion was constantly sought for by many in the artistic professions.

Mr. Thomas R. Bickerton, Ophthalmic Surgeon to the Royal Infirmary, gave an account of the work of Mr. Browne, not only as a medical student, but as a medical practitioner. Liverpool had been a gainer in every respect in possessing such a citizen. In the early part of his career Mr. Browne paid a good deal of attention to diseases of the skin, and his published papers in the *Liverpool Medical and Surgical Reports* in 1869 and later revealed not only correct clinical observation, but evidence of that critical faculty which had ever characterized his work. In ophthalmology the many papers Mr. Browne had published showed how wide his researches had been and how valuable his observations were to all who practise the speciality.

The resolution was carried by acclamation.

Dr. George C. Walker gratefully acknowledged the honour that had been paid him, and his reply was adorned with apt poetical quotation referring to the responsibilities of a medical man. No class of men were called upon to do so much for so little, but, although they could not expect their attention to be repaid, they had their own exceeding great reward in the knowledge that they were doing good. It was such a thought that had sustained him throughout his professional life, and this vote of congratulation was to him a ratification of his endeavour to carry out this high ideal.

Mr. Edgar A. Browne genially objected to being pelted with virtues which he asserted he did not possess. He recalled to mind the reason of his becoming a member of the Medical Institution. It was not due to his professional knowledge, but to the fact that he was proficient in swimming. So good was he said to be in the science and art of natation that he was invited to come in and draw up a set of rules and regulations for persons apparently drowned. In spite of, or perhaps on account of, this circumstance, he felt he had received much benefit from his membership, and to his friends and all present he tendered his warm thanks for the honour they had paid him.

Ireland.

At the nineteenth annual meeting of the Royal Victoria Eye and Ear Hospital, Dublin, it was stated that 1,534 in-patients were treated during the year, and that the average number of beds occupied was 98.70. In the out-patient department 7,573 new patients were registered. In November, 1914, ten beds were placed at the disposal of the War Office, and in October, 1915, the number was increased in response to a request. Viscount Iveagh defrayed the cost of the equipment of these beds through the Dublin branch of the British Red Cross Society.

The Newry Board of Guardians has refused to adopt the graded scale of salaries for dispensary doctors recommended by the Local Government Board in 1906. The guardians have recently been advertising, without success, for a doctor for one of the districts, vacant by the resignation of Dr. Irvine. A substitute has been appointed as locumtenent at four guineas a week.

Correspondence.

MEDICAL ARRANGEMENTS AT SUVLA LANDING.

Sir,—The criticism in Parliament upon medical military affairs has aroused public anxiety. I trust some of it may be allayed when people hear the experience of one who took part in the treatment of those who were wounded during the first three days of the landing at Suvla Bay.

I was on board H.M. hospital ship *Soudan*, her station was in the naval firing line, and she received the first men who were wounded on the first day of the landing. I was deeply impressed by the efficiency of the first aid which was rendered to these men. All the wounds were skilfully dressed, properly splinted; those cases that required it had received a dose of morphine, and a short and accurate account was written on a label which was attached to each man. Many of the severe cases were so well and carefully dressed that I felt confident in leaving them until I could find more time to go thoroughly into their troubles.

On shore I could see many kinds of shells bursting among our advancing troops, on the land behind them, and on the beach where the wounded were being collected prior to their embarkation for our ship.

Nothing could have been wrong with the organization which planned and accomplished the deliberate and correct treatment of the wounded in the midst of that devastation, from which there was then no shelter. It must be borne in mind that this organized effort included the successful co-operation of naval and military medical units.

A good deal of the criticism made on this subject is based upon ignorance. Some of my professional brethren have told me I ought not to have been sent to Suvla Bay, and that my right place was at home to attend the cases on their return to this country. I was in my right place at Suvla Bay, where I attended numberless cases with which the work of my life had trained me to deal, and to any one of which I would have been called to see, immediately, at my hospital in London. The organization was as right in sending me there as it was in bringing me home when the ship was carrying cases mainly of a medical nature.

While in Eastern waters I had plenty of opportunity to observe the arrangements made by the naval and military authorities for the rapid conveyance and final accommodation of the wounded men disembarked from our ship. I came to the conclusion that had I friends or relations among those wounded in the Eastern theatre of war, I should be satisfied that the right thing would be done to them.—I am, etc.,

London, W., March 18th. G. Lenthal Cheatle.

THE PHYSICS OF A SURGICAL DRESSING.

Sir,—To my mind Major C. W. Duggan holds the key of the whole argument, namely, that antisepsis and osmosis should be our guides in treating wounds not aseptic. Provided the dressing is not left on the parts too long to become more of a menace than a benefit I consider that the drier the wound is kept the better. It must be remembered that a dressing is a compromise, and in many superficial wounds the advantage lies in applying as little dressing as possible. Provided the parts are kept clean any kind of dressing, no matter how effective, is a hindrance; the wound will do better if left uncovered. With deep-seated wounds, or wounds other than superficial, the case is rather different. Here we are concerned with a foul opening leading down to tissues more or less damaged, and that treatment which removes the discharge most effectively whilst keeping the surface sweet will give the best result. It is not a matter of moist *versus* dry dressing, but rather one of effective disposal of a discharge loaded with deleterious agents which may reinfect the surrounding parts. No doubt a wet dressing covered with impermeable material, if the parts are thoroughly drained and the dressing not allowed to become saturated with discharge, may not do much harm; indeed, I believe the healing process may be hastened. But in such a case the dressing should be renewed sufficiently often to keep the surface of the wound antiseptic; the frequency will depend upon the depth and character of the wound and the thoroughness with which antiseptics are brought into contact with the infected focus.

If the wound is septic, make it aseptic. Frequently we cannot attain to this perfection, but in all circumstances this end must be kept steadily in view, for until the wound becomes aseptic there can be no true healing process.

In general practice many so-called discoveries of to-day and yesterday have been in use time out of mind, and Sir Almroth's saline treatment of wounds amongst others. I know that my neighbours in Yorkshire, like myself, have used it for long. I have discarded impermeable coverings for dressings for a great many years. I very soon discovered their danger in a wide practice where patients cannot be seen every few hours.

I give this instance of the ineffectiveness of an impermeable dressing over a wound. An armourer-sergeant belonging to this town was sent home suffering from a septic finger which had been treated for more than a month. The finger had the usual wet dressing covered with impermeable oiled silk. I gave it a very thorough washing with a weak antiseptic, clipping away all dead skin, and clearing out the wound as well as I could, and then put it up in a dry dressing. It healed almost directly.—I am, etc.,

Helmsley, March 4th. Alexander Blair, M.D.

THE PRICE OF DRUGS.

Sir,—Is it not time that some effort was made by combined effort to do something to reduce the present price of drugs? It is a very serious matter for general practitioners who dispense their own medicines, and in my own case it had caused a 50 per cent. increase in cost during the last year.

One cannot possibly do without bromides and salicylates and many other drugs which at the present time are enormously increased in price.

Our Association should at once make representation to the Government and make an effort to induce private firms to set about manufacturing drugs that have previously been made in Germany. If there is anything whatever in the cry that after the war we shall boycott German products there ought to be no delay in guaranteeing the firms against any loss on their outlay in plant.—I am, etc.,

Buckingham, March 7th. Arthur E. Larking.

Universities and Colleges.

UNIVERSITY OF DURHAM.

The following candidates have been approved at the examinations indicated:

First M.B. (*Elementary Anatomy and Biology, Chemistry, and Physics*).—*R. L. Dagger, *R. C. Brown, T. H. R. Anderson, N. R. Beattie, Dorothy O. S. Blair, Nan Coxon, H. L. Mather, R. P. Wanless, Philomena R. Whitaker. *Elementary Anatomy*: M. J. Erdberg, Kun Piu Leung, May Raw, R. Sanderson

Second M.B. (*Anatomy and Physiology*).—*J. M. Brydson, *J. R. Hughes, S. Raj Chatterji, S. (Rev.) Foskett, I. Girgis, S. E. Goulstine, J. P. Higham, D. Levinstein, Habib Toma, H. W. Walther, G. R. Woodhead. (*Anatomy*.)—Iris M. Cheeseright.

*Honours—Second Class.

Obituary.

THEODORE THOMSON, C.M.G., M.D.LOND., D.P.H.CAMB.,

FORMERLY ASSISTANT MEDICAL OFFICER TO THE LOCAL GOVERNMENT BOARD.

By the death of Dr. Thomson at the comparatively early age of 57 the public health service has lost a first-class epidemiologist and sanitary administrator. The son of the Rev. Wm. Thomson, of Belhelvie, Aberdeenshire, he was one of a large family, several members of which have taken important positions in the profession of medicine. He studied at Aberdeen, Edinburgh, and London, taking the degree of M.D.Lond. in State Medicine in 1892 and the D.P.H.Camb. in 1888. His first public health appointment was that of M.O.H. to the city of Aberdeen in 1886, which appointment he resigned after less than two years' service to take a similar post at Sheffield. During the small-pox epidemic at Sheffield, which prevailed during 1887-8, he was in charge of the administration of the public health service of the town, and his ability as an administrator was brought to the notice of the Local Government Board by the late Dr. W. F. Barry, whose report on the outbreak is so well known. Dr. Thomson joined the staff of the Board as a medical inspector in 1891, and continued in the service of the Board until his retirement, owing to continued ill health, in 1913.

He was at first engaged in numerous inquiries on the causation of outbreaks of disease, particularly on outbreaks of enteric fever at Maidstone, Worthing, Newport (Isle of Wight), Chichester, Swinton and Pendlebury, and many others. His conclusions were in all cases logical deductions from the facts, and if no conclusion could be come to he at once admitted this, and did not shirk the issue by bringing forward surmises or unsupported hypotheses. Thus, in his report on recurrent prevalence of enteric fever in the Folkestone urban sanitary district during the years 1896-1900, he admitted that the fever could not be explained on the known facts. At the same time he drew attention to the presence of the same milker at each of three farms the milk supplied from which was suspected as the medium of infection. It was not until the continued prevalence of fever at Folkestone was again investigated in 1909 by his lamented colleague, the late Dr. R. W. Johnstone, that it was ascertained that this milker was an enteric fever "carrier," and had for fourteen years been producing the fever. These occurrences caused him subsequently to devote a large amount of work to the investigation of the effect of "carriers" in disseminating enteric fever; and in conjunction with Dr. J. C. G. Ledingham extensive inquiries were made as to the proportion of carriers among convalescents, the duration of their infectivity, and other matters. If it had not been that his health broke down there is no doubt that he would have dealt with the whole subject in a comprehensive report. As his experience increased he was engaged on various important Commissions; he was placed on the committee of inquiry into the public health of the city of Dublin and was appointed delegate for England at the International Sanitary Conferences at Paris and Rome in 1903, 1906, and 1907. In 1904 the prevalence in the West Indies of small-pox of a very mild type, such that the nature of the disease even was often in doubt, led to great difficulties, owing to the differing quarantine regulations of the various islands. Dr. Thomson was sent out to endeavour to settle this question, to secure the adoption of some uniform procedure, and to reorganize the sanitary administration. In this he succeeded. In 1906 he was sent on a special mission to advise on the sanitary defence and administration of the Persian Gulf, in conjunction with the Powers interested in this region, especially for the prevention of the importation of exotic disease from the shores of the Persian Gulf to other countries. For his services to the Colonial and Foreign Offices he received the C.M.G. From this time he became more and more engaged in the prevention of importation and spread of diseases of an exotic nature, an important part of the work of the Local Government Board which perhaps is not generally known to the public. He was frequently consulted by the Colonial and Foreign Offices on such subjects as cholera, plague, yellow fever, and colonial sanitary administration in general. For some years he was a member of the West African Medical Advisory Committee, and was British representative on the International Office of Health and Public Hygiene, the head quarters of which are at Paris. There was, however, one important disease which is endemic and epidemic in this country to which he devoted much attention, and his report "On measles in England and Wales, and measures which may be or have been adopted by sanitary authorities for controlling this disease" forms a classic on the subject. He showed that although a number of authorities had adopted the compulsory notification of this disease, this notification had not been properly followed up by visits of advice to the parents, provision of nursing assistance in the homes for cases needing it, provision of medical attendance under similar circumstances, nor the provision of hospital treatment of cases which could not be properly looked after at their homes. Owing, as was believed, to lack of these provisions, the result of notification was very disappointing, and there was no reduction in the excessive mortality from this disease, which causes such a waste of infant life. The recent Order of the Local Government Board empowering sanitary authorities to provide all these desiderata for dealing with measles may be looked upon as the fruit of his work in this direction. In 1911 Thomson succeeded the late Dr. H. Franklin Parsons as assistant medical officer to the Board, and from this period until his retirement early in 1913 his time was taken up in administrative work.

Of striking presence, clear intellect, polished and suave in manner, with a good knowledge of the French language, Thomson was marked out for a diplomatist. Fond of company, devoted to golf, he had a large circle of friends; he never married. His services were readily available to all applicants, and he never appeared to be too busy to devote any amount of time to the assistance of any investigator who might ask his advice on public health matters; but there can be no doubt that for years he worked too hard and overtaxed his physical powers. His retirement was a great loss to the Local Government Board, and other departments of the State will no doubt miss his wise and prudent counsels.

SIR CHARLES BALL, BT., F.R.C.S.

We regret to record the death of Sir Charles Bent Ball, Bt., M.D., M.Ch., F.R.C.S., which occurred on March 17th at his residence in Dublin.

The late Sir Charles Ball was a surgeon of great eminence, and his abilities caused him to be held in high respect not only in Ireland but throughout the United Kingdom. He was born in 1851, and was the youngest son of the late Robert Ball, LL.D., and brother of the well-known astronomer. Sir Charles Ball received his education at Trinity College, Dublin, and from his entrance to the medical school of the college in 1870 his career was a series of rapid successes and distinctions. In 1871 he was a senior moderator, and graduated B.A.; in 1872 he gained the Senior Medical Exhibition and Travelling Prize. In that year also he took the degrees of M.B. and M.Ch., while three years later he became M.D. He studied also in Vienna. He became a Fellow of the Royal College of Surgeons of Ireland in 1879, and in 1900 received the honorary Fellowship of the Royal College of Surgeons, England. Two years later he gave some lectures at San Francisco, and in 1903 was Erasmus Wilson Lecturer to the Royal College of Surgeons. He published a number of papers in the medical journals and transactions, and was the author of a well-known book on diseases of the rectum and anus, a second edition of which appeared in 1896. He described a special operation for the cure of pruritus ani which is commonly spoken of by his name. Among the numerous appointments held by Sir Charles Ball were those of Honorary Surgeon to the King in Ireland, Regius Professor of Surgery in the University of Dublin, President of the Royal Academy of Medicine, Ireland, Lord Chancellor's Consulting Surgical Visitor in Lunacy, and medical referee for Dublin City and County under the Workmen's Compensation Act. He was the representative of Dublin University on the General Medical Council, and a Past President of the University Biological Association. In addition to being consulting surgeon to various Dublin hospitals, he was

visiting surgeon to Sir Patrick Dun's Hospital; he was also consulting surgeon to the Masonic Girls' School and Simpson's Hospital. His practical skill as a surgeon was equal to his attainments and knowledge, and it will be remembered that it was Sir Charles Ball who operated upon Lady Dudley during her serious illness when Lord Dudley was Lord Lieutenant of Ireland.

Soon after the outbreak of war Sir Charles Ball was made a temporary lieutenant-colonel R.A.M.C., and was frequently present at the disembarkation of wounded soldiers brought to Dublin, even on occasions when severe weather and early hours made attendance trying for a man of his years. At one time he was a member of the Advisory Board for the Army Medical Service. He was president of the Leinster Branch of the British Medical Association in 1903, and of the Section of Surgery of the annual meeting in 1905, when the Association met in Leicester. Sir Charles Ball was also a president of the Royal Zoological Society of Ireland, and took a keen interest in the work of this society for many years. He was knighted in 1903, and in 1911 was created a baronet.

ODILLO MAHER, M.D.,

OPHTHALMIC SURGEON TO THE SYDNEY HOSPITAL.

OUR correspondent in Sydney, New South Wales, writes: By the death of Dr. Odillo Maher, of Sydney, which occurred at Hobart, Tasmania, on January 10th, from acute pneumonia, the medical profession in Sydney has lost one of its leading members. He was born in Sydney in 1858, and was educated at St. Mary's College, Lyndhurst, and at St. Patrick's College, Goulburn. After spending a year at the Sydney University he went to Ireland, and in 1881 he took the degrees of M.D., Ch.M. at the Royal University. In the following year he obtained the diploma of M.R.C.S.Eng. He early devoted his attention to ophthalmology, and was appointed house-surgeon to Moorfields Hospital, and later became clinical assistant at the same hospital. On his return to Sydney he began practice as an ophthalmic surgeon. In 1886 he was appointed honorary ophthalmic surgeon to the Sydney Hospital, and also to St. Vincent's Hospital, Sydney; both positions he retained up till the time of his death. He was also examiner in ophthalmology in the Sydney University. He occupied several important positions at different times. He was President of the Eye Section at the Australasian Medical Congress in Adelaide in 1905; he was a member of the Council of the New South Wales Medical Union for many years, and a member of the New South Wales Medical Board for the last two years. He was a Fellow of St. John's College within the University of Sydney, and was recently appointed a member of the consulting staff of the Military Base Hospital at Randwick, Sydney.

In 1894 he was one of the victims of the serious railway accident at Redfern, and was severely burnt about the hands and face. This necessitated a prolonged absence, and it was feared that he would never be able to resume his work as an operating ophthalmic surgeon. Fortunately this unfavourable opinion proved to be incorrect, and he resumed full work after an interval of two or three years. He contributed many important articles to the medical journals on his own speciality.

The funeral at Waverley cemetery, preceded by a Requiem mass at St. Mary's Cathedral, was largely attended. He leaves a widow and a family, one of his sons having but recently graduated in medicine at the Sydney University.

DEPUTY SURGEON-GENERAL JAMES LANDALE, R.A.M.C. (retired), died at Cheltenham on March 8th, aged 79. He had dined out on the evening of March 7th, and, walking home, stumbled over an obstruction in the dark and fell. He was assisted home, and did not seem to have been seriously injured, but passed away in his sleep during the night. He was educated at Edinburgh University, where he took the degree of M.D. in 1856 and the L.R.C.S.Edin in the same year. He entered the army as assistant surgeon on September 15th, 1857, became surgeon in 1869 and surgeon-major in 1873, retiring as deputy surgeon general on December 10th, 1892. He served in the Indian Mutiny in 1858–59 with the 92nd Foot, and was present at the actions Rahatgarh, Mangrauli, Sindwaha, Kurni, and Baroda, and received the Mutiny medal. By a sad coincidence his son, Captain James R. Landale, was killed in action in Mesopotamia on the day of Deputy Surgeon-General Landale's death.

LIEUTENANT-COLONEL ROBERT ALEXANDER PETER GRANT, R.A.M.C. (retired), died at Reay House, Inverness, on March 8th. He took the M.R.C.S. in 1858 and entered the army as assistant surgeon on June 13th, 1859, becoming surgeon in 1871, surgeon-major in 1873, and retiring with a step of honorary rank on July 2nd, 1884. He served in the New Zealand war of 1863–66 in the province of Terawaki, was mentioned in dispatches in the *London Gazette* of October 20th, 1865, and received the medal.

SURGEON-MAJOR EDMUND JOHN HOSKINS, Bengal Medical Service (ret.), died in London on January 22nd, aged 79. He was educated at St. Bartholomew's, and took the diplomas of M.R.C.S. in 1858 and L.S.A. in 1859, and the degree of M.D. at St. Andrews in 1860. He entered the Indian Medical Service as assistant surgeon on October 1st, 1860, became surgeon on October 1st, 1872, and surgeon-major on July 1st, 1873, retiring on April 7th, 1879. The *Army List* assigns him no war service.

WE regret to announce the death of Dr. DAVID W. CHEEVER, which occurred at his house in Boston on December 27th, at the age of 84. He graduated at Harvard in 1852 and was one of the original surgical staff of the Boston City Hospital which was opened in 1864. He had been a teacher at Harvard since 1860 when he was appointed demonstrator of anatomy. He became professor of clinical surgery in 1875 and professor of surgery in the Medical School in 1882. On his retirement in 1893 he received the title of emeritus professor. He was president of the American Surgical Association in 1889 and the author of *Lectures on Surgery* and of more than sixty papers and addresses on professional topics. He reported more than 1,200 major operations performed by himself, with 85 per cent. of recoveries.

DEATHS IN THE PROFESSION ABROAD.—Among the members of the medical profession in foreign countries who have recently died are Professor Gilbert-Ballet, of Paris, one of the foremost authorities on mental disease in France; and Dr. Léon Labbé, senator for the Orme department, and member of the Institute of France, whose name is associated with a successful operation on a man who had swallowed a fork, aged 83.

Medico-Legal.

WORKMEN'S COMPENSATION FOR RHEUMATISM.

Glasgow Coal Company Ltd. v. Welsh.

THE House of Lords on March 6th gave judgement on an appeal from the Second Court of Session in Scotland which raised a point of some novelty under the Workmen's Compensation Act, 1906.

The facts were as follows: One, Welsh, was a miner employed as a brusher at the Glasgow Coal Company's colliery. On October 23rd, 1914, the water pump broke down and a large quantity of water accumulated in the pit bottom. Work was suspended, and five days later Welsh was directed to go down the pit. He went down in the belief that he was going to do his ordinary work as a brusher, but, in fact, on reaching the pit bottom he was told off to bale the water. On this work he was engaged up to his chest in water for eight hours.

During the next day or two he felt great stiffness and cold and pains in his joints, but continued to work till the morning of November 2nd. On November 3rd he consulted a doctor, who found that he was suffering from subacute rheumatism. On January 26th, 1915, he returned to work but was unable to earn his full wages, and his incapacity did not wholly cease until March 2nd, 1915. During the whole of this time he was suffering from rheumatism caused by the extreme damp and exposure to which he had been subjected.

The Sheriff Substitute had found that this was an injury caused by accident "arising out of and in the course" of Welsh's employment, and made an award in his favour.

Viscount Haldane, in his speech, said that the question was whether, upon the above facts, the event could be, in point of law, an accident within the meaning of the Act. He thought that had Welsh died suddenly while so exposed there could be no doubt that that would have given a title to his dependants

to claim on the footing of injury from accident, and he was unable to see why a claim in respect of a less serious mishap should be excluded by the circumstance that the miscalculated action of entering the water took time to produce its consequences. In his judgement that miscalculated action of entering the water must be taken to have constituted a definite event which culminated in rheumatic affection and to have imported into that event the character of an accident within the meaning of the Act.

The other lords concurred, and the appeal was dismissed.

The Services.

INDIAN MEDICAL SERVICES.

IT has been decided that the outfit allowance of Rs. 600, notified in India Army Order, No. 122, dated March 22nd, 1915, shall be granted to all I.M.S. officers in permanent civil employ (including those who have officiated for three years in civil employment) who reverted to military duty, during the present war, prior to the issue of India Army Order, No. 546, dated October 11th, 1915.

EXCHANGE DESIRED.

TEMPORARY LIEUTENANT, anaesthetist to a base hospital in France, wishes to exchange with officer similarly employed in London or neighbourhood.—Address No. 1250, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

Medical News.

THE Wellcome Historical Medical Museum, Wigmore Street, will be closed for cleaning during the whole of the month of April.

PROFESSOR J. MARTIN BEATTIE, M.D., will open a discussion on tuberculous diseases of children and the milk supply at a provincial meeting of the Royal Sanitary Institute to be held at the University of Liverpool on March 31st at 3.30 p.m.

APPLICATIONS from hospitals within nine miles of Charing Cross, and from convalescent homes and sanatoriums for consumption taking patients from London, to participate in the grants made by King Edward's Hospital Fund for London must be received at 7, Walbrook, London, E.C., before March 31st.

IN response to the request of a First Aid Conference held at Washington in August, 1915, President Wilson has appointed a board of standardization to investigate first aid methods, packages, and the standardization of equipment, and to draw up a uniform course of instruction to be given throughout the country.

THE late Mr. Stanley Boyd left estate valued at £32,646. After providing for certain legacies he left the residue of his property in trust for his mother and sister and the survivor of them, and subject thereto he gave £2,100 to Epsom College for one foundation scholarship, and the ultimate residue to the University of London for the endowment of a professorship of pathology in the Medical School of Charing Cross Hospital. Out of the property bequeathed to him by his wife he gives a number of legacies to her relatives, £1,000 each to the London School of Medicine for Women, the New Hospital for Women, and the Pathological Department of the New Hospital for Women, and any residue to the New Hospital for Women.

THE Military Education Committee of the University of London has presented its annual report for 1915. The medical unit was in camp for its annual training during the summer vacation on Salisbury Plain. Arrangements have been made for camp training during the other vacations, and for periods of intensive training in preparation for the special examinations for certificates A and B held for cadets of this unit. Upon the announcement of the War Office's decision in regard to the younger medical students taking combatant commissions, a considerable number of medical cadets transferred to the artillery and infantry units. Three former officers of the University of London O.T.C. (of whom one was an ex-cadet), eighty-six former cadets, and one other officer recommended for his commission by the university have fallen in the war. A number of honours, including one Victoria Cross, have been awarded to officers and cadets of this corps.

WITH the *St. Bartholomew's Hospital Journal* for March is published, under the title *St. Bartholomew's and the War*, a second supplementary list, made up to February 16th, 1916, of those connected with the hospital and medical school who are serving in the navy, army, and territorial force. It brings up the number to over 1,600. Five, of whom two were serving in the R.A.M.C. (Lieutenant Brunton and Lieutenant Garrod, both sons of members of the staff of the hospital), were killed in action; six, of whom two were in the R.A.M.C., have died of wounds; three, all in the R.A.M.C., have died; eleven, of whom seven were in the R.A.M.C. and one in the I.M.S., have been wounded. The good services rendered by many others have been recognized in dispatches and by promotions and decorations. The list is illustrated by portraits of many of those who have been killed, or died; among the portraits is that of Miss Buckingham, who died as matron of the 2nd Birmingham War Hospital. The list contains the names of forty-four other present or former nurses of the hospital who are serving with the armies at home or abroad.

SPECIAL meetings of the Central Midwives Board were held on March 15th and 17th. Reports on 7 adjourned cases resulted in no action being taken in 5; 1 case was further adjourned for three months, and 1 woman was struck off the roll. Of the 14 fresh cases, 1 midwife was severely censured, judgement on 2 others was postponed for reports in three and six months, and 11 women were struck off. Neglect in cases of ophthalmia neonatorum, puerperal fever, and pemphigus were among the most serious charges, but there was one of signing a false certificate of stillbirth; as usual, there were a number of cases of ignorance of the use of the clinical thermometer, inability to take the pulse, want of cleanliness, etc. The Board held its monthly meeting on March 16th. In reply to a letter from the General Medical Council regarding an alleged case of "covering" an uncertified woman by a registered medical practitioner, the Board, in forwarding the papers to the Council with a request that it will take such action in the matter as it may see fit, expressed its readiness, if so desired, to appear as prosecutors in the case. The Standing Committee, having completed the revision of the rules after carefully considering suggestions for their amendment sent by local supervising authorities, medical officers of health, etc., decided to ask the Privy Council to approve the same and order that the new rules shall come into force on July 1st next for a period of five years. Sir Francis Champneys presided at all three meetings.

AT an inquest held recently at Wigan on an illegitimate child Mr. H. Milligan, the Wigan Borough Coroner, made some remarks reflecting on the medical man who had attended the child and who gave the death certificate. Not content with that, the coroner proceeded to make observations which can only be interpreted as an attack on the Wigan medical profession generally. In the case in question the statement of the woman who had charge of the child was to the effect that the child had suddenly appeared to be choking, and she had run with it to the doctor, who said it had croup, and gave medicine and certain directions for treatment. Next day the child was worse, and the doctor was sent for, and was said to have promised to go, but failed; the child died later in the day without having been seen again by the doctor, who gave a certificate of death from bronchopneumonia. On this one-sided evidence the coroner based his attack on the doctor, and made it a text on which to deliver a homily to the Wigan profession. As only too frequently occurs in coroners' courts in certain districts, the doctor's side is not given. He may have had perfectly satisfactory reasons for not carrying out his promise to visit, if he ever made it, and if the coroner had had any proper sense of fairness he would have seen that the doctor's side of the question was made as public as he asked the press to make the other side. According to the newspaper report, the coroner, after noting that the doctor had said that the child had croup, and yet gave a certificate of bronchopneumonia, added: "It made it very difficult to know where they were when they had such contradictory statements." The public have a right to demand that coroners who venture to criticize in such matters should have at least an elementary knowledge of what they are talking about. If the coroner had read in the official book of death certificates the instructions to medical practitioners as to the terms to be used in death certificates, he might have seen the injunction: "Avoid using the word 'croup' at all." If, as appears probable, the coroner's remarks about the Wigan medical profession in general are as unfair as his remarks about this particular case, the "higher authorities" to which he threatens to make complaint might well be asked to decide the additional question whether the coroner is not deserving of censure for thus displaying a want of acquaintance with the terms to be used in death certificates and for his one-sided treatment of the medical profession.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C., on receipt of proof.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are: (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2634, Gerrard. The address of the Irish office of the British Medical Association is 16, South Frederick Street, Dublin.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

QUININE COLLYRIA.

DR. B. W.—Quinine sulphate is only soluble in water to the extent of 1 in 800, therefore it is not possible to get a clear solution of 1 per cent. strength without the addition of acid, and if this were added the solution causes unnecessary pain. Quinine hydrochloride is soluble in water to the extent of 1 in 40; if, therefore, this salt be used, a clear bland solution of even 2 per cent. strength can be obtained. An even stronger and quite unirritating solution can be made by using the acid hydrobromide of quinine, which is soluble in water to the extent of 1 in 7. The hydrochloride is usually the more easily obtained. It may be added that cocaine has no curative value—in fact, aqueous solutions are injurious to the normal corneal epithelium, tending to cause exfoliation; consequently the healing of corneal lesions is delayed by its exhibition.

ANSWERS.

THE TREATMENT OF PRURITUS ANI.

DR. C. P. BURD (Upton-on-Severn) writes, in answer to "A. E.," to suggest that the patient be instructed to give himself a cold water enema each night before going to bed and to leave off all other aperients for a time.

DR. A. WINKELRIED WILLIAMS (Dermatologist, Royal Sussex County Hospital, Brighton) writes: Post-operative pruritus ani is frequently a nocturnal plague. A point in the management of these cases, not mentioned in most papers on the subject, is for the patient to acquire the habit of stooling just before going to bed. A small faecal mass in the rectum near the internal sphincter, or the site of an old operation, will light up a bout of itching, and its removal will often give a night of perfect freedom. The habit is to some patients rather difficult to acquire and a suppository may at first be required, and some find it inconvenient to habitually empty the rectum twice in twenty-four hours. In eczematous cases the time-honoured directions to wash with cold water after stooling does not always agree, and a mild antiseptic grease generally gives a better result; an ointment of hydrarg. oxid. flav. 2 grains, vaselin. flav. 1 ounce, should be freely applied to the anal region and just inside the external sphincter before stooling and used freely in after-cleansing. An efficient temporary remedy for bouts of intolerable pruritus is acid carb. 60 grains, ol. olivae 2½ ounces; in many cases it acts better and more rapidly than cocaine and is much safer.

LETTERS, NOTES, ETC.

NEED FOR RESIDENT SURGICAL OFFICERS AT HOSPITALS.

THE Central Medical War Committee invites applications from gentlemen of good hospital surgical experience, who, being over age or otherwise disqualified for service in the R.A.M.C., would yet be willing, if the necessity arose, to take appointments as resident surgical officers in hospitals. This appeal is not intended to interfere with the ordinary announcements of vacancies for such posts, but the Central Medical War Committee would like to have in reserve a supply of experienced surgeons who would, if necessary, be prepared to fill such appointments for a time. Applications should be sent to the Secretaries, Central Medical War Committee, 429, Strand, London, W.C.

THE DIAGNOSIS AND TREATMENT OF DIPHTHERIA.

LOCUM writes: As a locumtenent of considerable experience in many parts of England, I feel it my duty to call attention to a subject of very great importance both to the credit of the profession and the interests of the community—namely, the diagnosis and treatment of diphtheria. Nearly every practitioner with whom I have discussed the subject is more or less a law unto himself, and there appears to be no safe anchorage wherein to trust unflinchingly in the treatment of an illness giving rise at all times to great anxiety to all concerned. One practitioner does not believe in serum at all, and distrusts at times the accuracy of the positive microscopic report. Another is content to give the antitoxin by the mouth, and is convinced that he has got quite as good results from that method of administration, and that a favourite mixture given is sufficient treatment locally for the throat. Another gives subcutaneously 2,000 units of serum, and is more or less content to rest on his oars. Another I know of gives 8,000 or 12,000 straight away, and declares that anything less is useless. Still another says that by the administration of antitoxin a mysterious and deleterious negative phase is set up. And yet another has written that serum may be positively dangerous. Such a diversity of opinion is necessarily bewildering to the man who perhaps only sees an occasional case.

Of course one realizes that the severer cases will demand the more heroic treatment, but then it is not always easy to say when a case is, or is going to be, severe or not. In the obviously severe cases there is less difficulty, for in my experience, apart from the obviously dangerous constitutional symptoms, the amount and extent of membrane is not always a sure guide to severity. I think that if some practitioner of large experience would give us his precise methods of treatment, and a few hints on early diagnosis in doubtful cases, whilst the swab is on its journey or when it need not be sent, it would be a very real help; for prophylactic serum administration, although in my opinion the ideal and proper treatment, may not always be acceptable in the case of parents with a limited education, especially if it turns out to be simple tonsillitis, although I must say that when the position is put wisely before them they nearly always take the common-sense view; but these are just the cases in which the dosage of antitoxin presents the greatest difficulty, as time is recognized to be a factor of such vital importance.

WHAT DETERMINES SEX?

DR. STEPHEN M. LAURENCE (Trinidad, B.W.I.) writes: The following case, which recently came under my notice, might prove of interest. Mrs. P. is a vigorous-looking woman of 40 years. She has been married three times, and has had fifteen children—all boys. She gave her history as follows: She married very early, and had her first child, a boy, at 15 years of age. He is alive and well, aged 25. She had five other boys by her first husband, six in all. They were all born dead before the eighth month was completed (evidently she had developed syphilis). This husband had no other children. She bore her second husband five boys—the first three being born dead, the last two are still alive. This husband had two children by another mother—one boy and one girl. From her third marriage there are four boys. All of these are alive. The last husband has two other children—a boy and a girl. The woman here is the constant factor, the resulting sex being the same in fifteen consecutive pregnancies to three different men, two of whom had girls by another mother. The number of husbands and the unusual number of children seems to preclude mere accident.

DECREASE OF MEDICAL PUBLICATIONS.

THE annual report of the Library Committee of the Philadelphia College of Physicians for 1915 states that the total number of volumes in the collection, including 10,237 unbound *Reports* and *Transactions*, was 107,782. The number of unbound theses and dissertations was 12,949, and of unbound pamphlets 90,670. The total increase in the number of volumes during the year was 2,085. Owing to the war about 250 periodicals ceased to reach the library, while some twenty others were received at irregular intervals. Most of the books received, other than English or French, came through Amsterdam; no theses or dissertations were received from the war zone. In comparison with the number of new publications received in 1913, there was in 1915 a decrease of about 90 per cent. of the books published in French, about 69 per cent. of those issued in German, and about 34 per cent. in British publications.

BOLD ADVERTISEMENT.

MUCH has been heard of the commercial enterprise of Germany, and her newspapers are now boasting that she will quickly recover the trade lost owing to the war. Perhaps it is not sufficiently realized that German success in this, as in other fields, is largely due to sheer impudence. A curious example is given in the *Chronique Médicale* of February 1st. It is there stated that a number of French doctors have received from a Stuttgart firm of manufacturers of artificial limbs a catalogue of its wares with an offer of a large discount on the usual prices. Surely such an offer could only have come from Germany.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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